Personality Features in University Students: Links between Impulsivity, Aggressiveness and Psychopathic Characteristics

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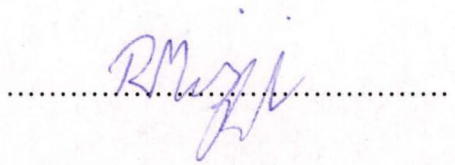
Statement

I declare that this thesis is my own work and that, to the best of my knowledge and belief, it does not contain material from published sources without proper acknowledgement, nor does it contain material which has been accepted for the award of any other higher degree or graduate diploma in any university.



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Literature Review

A Review of Impulsivity, Aggressiveness and Psychopathy: Definition and Dimensionality

Abstract

Traditionally, aggressiveness and impulsivity have been defined, measured and predicted based on the overt behaviour that is often displayed by those who possess a high level of these characteristics. As such, this has led to a view of human nature as either impulsive, aggressive or neither. This paper explores current theories regarding the development of aggressiveness and impulsivity and their nature, and argues that impulsivity and aggressiveness can be conceptualised as personality characteristics that exist on a continuum, and that each and every individual possesses some level of both. This paper further examines the nature and development of psychopathy as a personality disorder, and posits that this cluster of interrelated but relatively independent facets is also dimensional in nature. Finally, the current paper examines the role of impulsivity and aggressiveness in psychopathy, and suggests directions for future research.

As at the 30th June 2008, 21,275 prisoners were serving custodial sentences in Australia. Of these, the most common offence type was acts intended to cause injury, for example assault (Australian Bureau of Statistics, 2008). During the ten year period spanning 1998 to 2008, the proportion of prisoners charged with acts intended to cause injury had risen from 12% to 16% of all prisoners. In contrast, the percentage of other offences such as robbery and extortion decreased during the same period. This increasing trend was noted for both male and female prisoners, with the number of females showing the biggest increase, with a 60% increase for males, and a 120% increase in the number of females imprisoned for acts intended to cause injury. Interestingly, whilst overall the highest proportion of prisoners charged with acts intended to cause injury were between the ages of 25-34, prisoners under the age of 25 were more likely to be charged with acts intended to cause injury (25%) than other offences such as homicide, sexual assault, robbery and extortion, and illicit drug offences.

These statistics indicate that aggressive behaviour, especially that involving young adults and females is increasing in Australian society, while other types of crime, such as property crime, appear to be decreasing. This paper will explore theories regarding the development of aggression, and the links between aggression and personality pathology, namely psychopathy, and suggest future directions for research and interventions.

Aggressiveness

Extensive research into aggression has been conducted throughout the decades by researchers from numerous disciplines. Despite this, the literature demonstrates little consensus in achieving a widely accepted definition of

'aggression'. This difficulty is further compounded by the lack of consistent methods for investigating and measuring aggression (Barratt & Slaughter, 1998; Parrott & Giancola, 2007).

Parrot and Giancola (2007) posit that over 200 different definitions of aggression existed in 1983, and that many more have been advanced since that time. It appears that researchers of aggression can be split into two groups that differ on one major point – the breadth of the definition of aggression. The first group of aggression researchers are those who define aggression as a *behavioural process* (for example, Parrott & Giancola, 2007). According to these researchers, aggression can be defined as 'any deliberate verbal or physical act directed against a person or object that has the potential to cause physical or emotional harm' (Coccaro, 1998, p336). Others have extended this definition by specifying the perpetrators' intention and the victim's level of motivation to avoid harm to delineate harmful acts that are not intended to be aggressive (such as accidents), harmful acts that the victim is not motivated to avoid (such as suicidal behaviour), and prosocial acts that happen to cause harm to the victim (such as some forms of medical treatment) (Anderson & Bushman, 2002; Baron and Richardson, 1994).

The second group of aggression researchers adopt a holistic approach to the construct. According to these researchers, aggression is a higher order concept that encompasses not only the behavioural component of aggression, but also cognition, biology and environment (physical and social stimuli) (Barrett & Slaughter, 1998; Buss and Perry, 1992). This view characterises aggression as an aspect of personality, and encompasses the *tendency* toward aggressive behaviour, which may be moderated by internal or external factors. To avoid

confusion between these two frameworks, the latter view will be referred to as *aggressiveness* throughout this paper.

Development of Aggressiveness and Aggression

The act of aggression against another living being has over time become a behaviour that is viewed negatively in human society. It can be argued however that aggression is a natural and adaptive phenomenon, which occurs throughout animal species. Aggression amongst animals serves a vital function, in that stability regarding hierarchy and territory are maintained. Individual differences in the experience and expression of aggression are necessary to form hierarchies amongst groups of animals. Amongst human beings, the evolution of spoken language has provided alternative forms of conflict resolution, and advances in society, including the creation of social rules, has served to reduce the level of aggressive behaviour that is tolerated, with legal sanctions commonly brought against adults who engage in aggressive behaviour.

In a review of the aggression literature, Loeber and Hay (1997) identified a range of variables that contribute to the development of aggression. These include: temperament, intelligence, social learning (family and peer influences), attitudes and cognitions, self esteem and information processing. Similarly, a meta-analysis conducted in 2006 (Bettencourt, Talley, Benjamin & Valentine) noted these factors as predictors of aggression; however they noted that many theorists largely ignore the role of self-regulation in the expression of aggressive behaviour. Although useful, these variables do not provide a cohesive theory to explain the development of aggression, and why some people behave in a more aggressive manner than do others.

Various theories have been posited regarding how the development of aggressiveness occurs and is expressed. These include social learning theory (e.g. Bandura, 1973), attribution theory (e.g. Crick & Dodge, 1994); and cognitive structure theories (e.g. Berkowitz, 1993). More recently, in an effort to clarify and integrate these theories, Anderson and Bushman (2002) proposed the general aggression model. An in-depth analysis of this model is beyond the scope of this paper, however key points will be presented.

According to Anderson and Bushman (2002) the general aggression model draws heavily on theories regarding the development and use of knowledge structures for perception, interpretation, decision making and action. They note five key features of this model:

a) knowledge structures develop out of experience
b) knowledge structures influence perception at multiple levels, from basic visual patterns to complex behavioural sequences
c) knowledge structures can become automatised with use
d) knowledge structures can contain (or are linked to) affective states, behavioural programs and beliefs
e) knowledge structures are used to guide peoples interpretations and behavioural responses to their social (and physical) environment (p33)

Knowledge structures of importance in this context include perceptual schemata, person schemata and behavioural scripts.

The general aggression model proposes three main factors in the development and expression of aggression: the person and situational inputs; cognitive, affective and arousal routes through which these input variables have their impact; and outcomes of the underlying appraisal and decision processes.

Inputs

Person Factors

Person factors refer to the relatively stable characteristics that a person brings to a situation. These include: personality traits, sex, beliefs, attitudes, values, long term goals and interpretational and behavioural scripts.

Anderson and Bushman (2002) concede that some individuals seem more predisposed toward aggression than do others. They note that recent findings in relation to self esteem have contradicted the traditional theory that people with low self esteem are more likely to engage in aggressive behaviour, and in fact it is certain types of high self esteem that predict aggression. Specifically, individuals with inflated or unstable self esteem (narcissists) are significantly more likely to aggress, especially when they perceive their ego is threatened by others.

In relation to sex differences, males and females have been found to experience similar levels of anger, although most research has indicated that men are more likely to openly express their anger by directly confronting the angering person in the form of verbal and physical assault. Females on the other hand are more likely to discuss their anger with an uninvolved person (Campbell, 2006). Despite these findings, an examination of Australian crime statistics indicates that female perpetrated aggression is on the rise. The number of female prisoners in Australia has increased by 72% between 1998 and 2008. Although this figure may in part reflect tougher approaches to sentencing of female offenders, it is of note that of those women sentenced, the largest increase in offence type was acts intended to cause injury (such as assault), which rose by 120% during the ten year period (Australian Bureau of Statistics, 2008).

Situational Factors

These include: aggressive cues, provocation, frustration, pain and discomfort, drugs (especially alcohol), and incentives.

Aggressive cues refer to stimuli that prime aggression-related concepts in memory. Many researchers have noted the importance of provocation and frustration in aggression (e.g. Campbell, 2006), noting that when insults, interpersonal slights, other forms of aggression or interfering with attempts to reach a goal are present individuals are more likely to aggress.

Routes

Cognition

Input variables influence outcomes through the present internal state they create. Cognitive factors include: hostile thoughts and easily accessible aggression scripts.

Cognitive scripts refer to a cluster of behaviours, cognition and emotions that through rehearsal become habitual programs. Over time, patterns of aggression repeat, are encoded and rehearsed. When items (such as thoughts, memories or emotions) are strongly linked they form a script and become a unitary concept in semantic memory. This leads to a 'shorthand' type experience, and aggression scripts are therefore more accessible in the future. These scripts are filtered through normative beliefs, beliefs about appropriate and acceptable behaviour (Fiske, 2004).

Affect

These factors include: mood and emotion, and expressive motor responses.

Izard and colleagues (1995) noted that infants as young as three months of age show facial configurations associated with the experience of anger in adults, and by 12 months of age children respond with protest or retaliation to perceived conflict. Others have indicated that babies with a difficult temperament (harder to soothe, irritable, express more anger) were more likely to experience behavioural problems and aggression. However, this finding appears to be moderated by other factors, such as mother-infant bond, early social experiences and physical factors such as hearing difficulties, health conditions, and sleep difficulties.

It has been noted that as the level of provocation increases, the sex differences observed regarding aggressive behaviour appear to decrease. Campbell (2006) has proposed that females experience higher levels of fear than do males. However, the higher the perceived level of provocation in an episode, the more likely it is that the fear response will be overridden.

Arousal

Arousal can influence aggression in three ways. They are: arousal from irrelevant sources strengthening the dominant action tendency; irrelevant arousal can be mislabelled as anger in situations involving provocation (excitation transfer theory, Zillmann, 1988); unusually high or low levels of arousal may be aversive states, stimulating aggression in the same manner as other aversive stimuli.

Outcomes

The outcome of a present internal state involves several complex information processes, ranging from relatively automatic to heavily controlled. Immediate appraisals reflect automatic processes, and reappraisal reflects more controlled processes. The outcome of these decision making processes determine the final action, and cycles through the social encounter to become part of the input for the next episode.

Immediate Appraisals

Immediate appraisals are automatic, and as such are relatively effortless, spontaneous, and occur without awareness. These may produce an automatic trait or situational inference, and include affect, goal and intention information. An action at this stage may be impulsive in nature, i.e. 'hot' aggression.

Reappraisal

If there are sufficient resources (such as time or cognitive capacity) and if the immediate appraisal is important or unsatisfactory the person may engage in the more effortful process of reappraisal, during which they search for an alternative explanation. The individual may still choose to behave aggressively, in a thoughtful manner.

One key point in the general aggression model is that the experience of anger plays an important role in the development and expression of aggression, but is not an essential component. Anderson and Bushman (2002) contend that anger is involved in several processes that lead to the expression of aggression becoming more likely. Firstly, anger reduces inhibitions against aggressing by

providing a justification for retaliation, and by interfering with higher level cognitive processes which occur in the reappraisal process (such as moral reasoning and judgement). Secondly, anger allows a person to maintain an aggressive intention over time by directing attention toward the salient cues and aiding recall of these. Thirdly, anger is used as an information cue, especially in ambiguous situations. Fourth, anger primes aggressive thoughts, scripts, and associated expressive-motor behaviours. Finally, anger energises behaviour.

Impulsivity

In the same vein as aggressiveness, impulsivity is another construct that has traditionally been defined in terms of behaviour. Broadly, impulsivity refers to the tendency to act on the spur of the moment, without consideration of the consequences of such action (Campbell, 2006; Plutchik & van Praag, 1995). This definition can be interpreted to encompass both reactions to negative events, and sensation seeking. Other researchers have proposed that the construct of impulsivity is narrower. For instance, Moeller, Barrett, Dougherty, Schmitz and Swan (2001) note that impulsivity involves a 'predisposition toward rapid unplanned *reactions* to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individual or to others' (p 1784). Eysenck, Pearson, Easting and Allsopp (1985) contend that impulsivity is a composite construct, encompassing impulsiveness (which is aligned to Moeller et al.'s narrow definition) and venturesomeness (which encompasses sensation seeking and risk taking behaviour).

These definitions highlight the nature of impulsivity as a personality trait, rather than a single behaviour. They also place an emphasis on the theory that

impulsive behaviour occurs before the individual has had the opportunity to weigh up the consequences of such behaviour. High levels of impulsivity have been implicated in the development of antisocial behaviour, including persistent vandalism, persistent theft and physical aggression (Carrasco, Barker, Tremblay & Vitaro, 2006)

A high level of impulsivity is significant in literature concerning aggression, as there may be different implications for differing acts of aggressive behaviour in terms of cause and potential intervention.

Impulsive-aggressiveness

One of the myriad ways to delineate types of aggression is to distinguish between premeditated and impulsive aggression. Impulsive-aggressiveness (also referred to as 'hot', hostile or reactive aggression by various authors) is defined as the tendency toward rapid, unplanned aggressive acts that are out of proportion to the provocation, made by people who are perceived to have a 'short fuse' (Barrett, Stanford, Dowdy, Liebman, & Kent, 1999). In contrast, premeditated aggression (or 'cold', planned, instrumental or predatory aggression) is not believed to contain a significant emotional element.

According to Barrett et al. (1999), impulsive aggression and premeditated aggression are independent constructs. Theoretically, an individual can engage in each type of aggression without a consistent tendency towards committing either impulsive or premeditated aggressive acts. These authors found that where impulsive-aggressive acts were characterised by feelings of anger, cognitive and motor impulsiveness and feelings of guilt after the act, premeditated aggressive acts were not. Subsequent work has indicated that the offences of a forensic

sample of aggressive offenders can be effectively classified into two independent categories: predominantly premeditated aggression and predominantly impulsive aggression (Kockler, Stanford, Nelson, Meloy & Sandford, 2006). However, there is also some evidence suggesting that these constructs are significantly related to each other, and that a single aggressive act may have both reactive and proactive motivations (Miller & Lynam, 2006). Kockler et al. (2006) suggest that in a forensic sample this may represent criminal versatility, with offenders engaging in both impulsive and premeditated aggression.

Due to the high level of overlap between impulsive aggression and premeditated aggression Bushman and Anderson (2001) have suggested that there is little utility in classifying aggressive acts in this way, as aggression can often involve multiple motives. While this framework is gaining popularity it is clear that impulsiveness as a personality trait continues to play a significant part in the experience and expression of aggression.

Impulsivity as related to aggression appears to be most salient in the way in which an individual processes social information (Crick & Dodge, 1994). Impulsively aggressive individuals have been found to be more irritable than non aggressive individuals, and as such more characteristically 'ready to explode' (Stanford, Greve & Dickens, 1995). They also appear to make more mistakes when attributing intent to other people's behaviour. Specifically, impulsively aggressive individuals appear to demonstrate a greater hostile attribution bias than do premeditatively aggressive individuals, particularly in situations where the other person's motives are not clear.

As noted in the definition, the relationship between impulsivity and aggression is particularly strong under conditions of provocation. Bettencourt,

Talley, Benjamin and Valentine (2006) found that certain personality variables were associated with aggression across both neutral and provocation conditions (including trait aggressiveness and irritability), but that other personality variables were associated with aggressive behaviour only when provocation was involved. Among these were high levels of impulsivity, trait anger, narcissism, emotional susceptibility and rumination.

According to the general aggression model (Anderson & Bushman, 2002), aggression can be conceptualised as a trade off of impelling and inhibitory factors (Campbell, 2006). Impulsiveness, or the tendency to act without considering possible consequences, is located within the outcomes stage of the general aggression model. Impulsive individuals are more likely to act on their immediate appraisals of situations without investing resources in more effortful reappraisals, which serve to provide an alternative view of a situation (Anderson & Bushman, 2002). Thus, following a rapid, automatic appraisal of a situation as hostile, they experience an impulse to strike out in a pre-emptive fashion at the perceived threat (Dodge & Schwartz, 1997, cited in Miller & Lynam, 2003). Similarly, James and Seagar (2006) found that persistently violent men experienced hypervigilance for a hostile world, and that the 'violence of these men may be borne of their impulsive proactive attempts to minimize the harm they believe is forthcoming' (p54).

Traditionally, the investigation of impulsive-aggression has occurred through analysis of behaviours, where participants have been classified as either impulsively aggressive or premeditatedly aggressive on the basis of their aggressive acts, and has usually involved a forensic sample (e.g. Kockler et al., 2006; James & Seagar, 2006). One potential problem with this approach is that

such a sample is by definition displaying unusually high levels of aggression compared to the general population, and (potentially) low levels of self control. This reasoning presumes that impulsive-aggressiveness is a categorical construct, that a person is either characterised as impulsive-aggressive, or not. Since the release of the DSM-IV there has been an ideological shift away from the idea of psychopathology being either present or absent, toward viewing personality traits and psychopathology as existing on a continuum. In this way, impulsivity and aggressiveness are present within every individual, but to a greater or lesser extent. Other traits, such as self-regulation, fear, and moral development also display individual differences. Thus, the complex interaction of differing levels of different traits not only indicates the extent to which an individual will engage in impulsive aggression, but also explains why different behaviour will occur in different situations for the same individual.

As previously stated, the tendency to classify participants based on whether they have engaged in impulsive-aggressive acts (usually of a violent nature) has led to the assumption that unless an individual is overtly aggressive to the extent that law enforcement or clinical agencies need to be involved, they do not experience difficulty functioning in everyday life. However, recent data suggest that there may be a group of non-forensic, non-clinical individuals who demonstrate high levels of impulsivity and aggressiveness, and that it is associated with significant behavioural and emotional concerns.

Links with Psychopathology

Individuals with high levels of impulsive-aggressive tendencies also appear to be at risk of a range of other clinically and forensically significant

issues. For example, Edwards and colleagues (2003) found that men who committed spousal abuse were significantly more impulsive and impulsively aggressive than those who committed non-violent offending. However, these men were also significantly more likely to meet criteria for borderline personality disorder, and antisocial personality disorder. This is not surprising as impulsive-aggressiveness is implicated in longstanding personality problems (see for example Helfritz & Stanford, 2006).

Recent research involving a non-clinical, non-forensic sample of impulsive-aggressive females has suggested that whilst these individuals may appear to function within society at a non-clinical level of concern, they do in fact demonstrate elevated levels across a range of problems and disorders. Crawley and Martin (2006) found that impulsive-aggressive women were more likely to engage in fighting behaviours and other antisocial behaviours with serious consequences than women who possessed a high level of aggressiveness only, impulsiveness only, or women with low levels of impulsiveness and aggressiveness. In addition, women who were both impulsive and aggressive were more likely to report a range of emotional difficulties, including depression and suicidal thoughts and attempts than the other groups. Likewise, Helfritz and Stanford (2006) identified a range of psychopathology that was elevated for impulsive-aggressive women. However, they noted that elevation profiles differed from person to person. Interestingly, they reported an absence of sex differences in the profile of impulsive-aggressive individuals on the measure they utilised (the Personality Assessment Inventory).

In addition to clinical psychopathology, impulsive-aggressive women demonstrated significant personality pathology, namely traits associated with

borderline personality disorder, antisocial personality disorder, and psychopathy (Crawley & Martin, 2006; Helfritz & Stanford, 2006).

Borderline personality disorder is characterised by features including instability in interpersonal relationships, dramatic and or inappropriate shifts in affect, including displays of anger, unstable self concept and impulsive and self-damaging behaviours. An in depth examination of the nature of the relationship between borderline personality disorder and impulsive-aggressive traits is beyond the scope of this review.

Antisocial personality disorder and psychopathy are terms which over the course of time have been used interchangeably. Despite this, convincing evidence has been produced to suggest that antisocial personality disorder and psychopathy are in fact distinct concepts. Ogloff (2006) noted that the DSM-IV construct of antisocial personality disorder has evolved over time due to criticisms regarding the 'unreliability' of the diagnosis. In an effort to increase agreement between professionals, specific criteria were developed for antisocial personality disorder. These criteria include:

- Evidence of conduct disorder before age 15 years
- Pervasive pattern of disregard for, and violation of, the rights of others since the age of 15 years, as indicated by three or more of the following:
    1. failure to conform to social norms with respect to lawful behaviours, as indicated by repeatedly performing acts that are grounds for arrest;
    2. deceitfulness, as indicated by repeated lying, use of aliases or conning others for personal profit or pleasure;
    3. impulsivity or failure to plan ahead

4. irritability or aggressiveness, as indicated by repeated physical fights or assaults;
5. reckless disregard for safety of self or others;
6. consistent irresponsibility, as indicated by repeated failure to sustain consistent work behaviour or honour financial obligations; and
7. lack of remorse, as indicated by being indifferent to or rationalising having hurt, mistreated, or stolen from another.

While the DSM-IV does refer to aspects of personality, an examination of the criteria for antisocial personality disorder indicates that the majority of diagnostic focus is on antisocial *behaviour*, especially behaviour that is related to criminality. Whilst the expectation that these behaviours are present before the age of 15 recognises that personality is a continuous (albeit dynamic) construct throughout the lifespan, little evidence of the more traditional personality features associated with psychopathy have been included within this cluster of symptoms.

A seminal investigation into the construct of 'psychopathy' was undertaken by Hervey Cleckley in 1941. Cleckley described 16 characteristics that he believed were the features of this personality type. These included:

1. Superficial charm and good intelligence
2. Absence of delusions and other signs of irrational thinking
3. Absence of 'nervousness' or psychoneurotic manifestations
4. Unreliability
5. Untruthfulness and insincerity
6. Lack of remorse or shame

7. Inadequately motivated antisocial behaviour
8. Poor judgement and failure to learn from experience
9. Pathological egocentricity and incapacity for love
10. General poverty in major affective reactions
11. Specific loss of insight
12. Unresponsiveness to general interpersonal relations
13. Fantastic and uninviting behaviour, with drink and sometimes without
14. Suicide rarely carried out
15. Sex life impersonal, trivial and poorly integrated
16. Failure to follow any life plan

It can be seen here that Cleckley's features of psychopathy involve affective issues and put a greater focus on deviant interpersonal interaction than do the antisocial personality disorder criteria. As such, a much smaller proportion of individuals would fit into this category than within antisocial personality disorder. It is also important to note that while the antisocial personality disorder criteria imply the presence of criminality, psychopathy is 'associated with a socially deviant (not necessarily criminal) lifestyle that includes irresponsible and impulsive behaviour and a tendency to ignore or violate social conventions' (Hare, 2006 p 709). Research involving incarcerated participants suggests that up to 80% of prisoners meet criteria for antisocial personality disorder (Ogloff, 2006), whilst approximately only 15-25% of prisoners demonstrate significant psychopathic personality (Hare, 2006).

The fact that these individuals appear to lack some of the most basic 'human' qualities, such as empathy and the ability to form meaningful relationships with others has raised questions regarding the nature of the

psychopath. Are they a distinct natural phenomenon or more simply individuals who display the extreme end of various personality traits? And at what point is the determination made that an individual displays a significant level of Cleckley's traits to warrant concern?

Psychopathy

Prior to answering the above questions, valid means of identifying individuals who display these traits is necessary. Currently the 'gold standard' of measurement is the Psychopathy Checklist-Revised, Second Edition (PCL-R: 2nd Ed; Hare, 2003). The PCL-R: 2nd Ed is a clinician-score 20 item tool. Extensive data obtained from file information and interviews is reviewed, and a score is given based on the extent to which the individual matches the 'prototypical psychopath'. A cut-off score is provided when using this measure.

It appears that the construct of 'psychopathy' as measured by the PCL-R (and recently replicated using other measures) is not a unitary construct, but rather may reflect deficits on a number of features. Initially conceptualised as two factors (a personality component and a behavioural component; Hare, 1991), this model was criticised for confusing the boundaries between personality and behavioural *outcomes* of personality (Cooke & Michie, 2001). However, others (e.g. Blackburn, 2007; Neumann et al., 2005) argue that antisocial behaviour can coexist with, or in fact precede, the development of other psychopathic traits. Currently the most widely accepted model of psychopathy proposes that each of Hare's initial two factors can be further separated into two facets. The personality factor (Factor 1) includes the presence of (a) interpersonal manipulation and (b) callous affect, whilst the behavioural component (Factor 2)

encompasses (a) an impulsive, thrill seeking lifestyle, and (b) antisocial behaviour (Hare, 2003; Neumann et al., 2005). However, recent research suggests that each of the four facets may be independently related to psychopathy, and should not be collapsed into Factor scores (Lilienfeld & Fowler, 2006; Neumann et al., 2007; Patrick et al., 2007).

Support for the premise that psychopathy is non-unitary in nature is further gained from studies investigating the validity of primary and secondary variants of psychopathy. Theorists propose that while primary and secondary psychopaths appear similar in presentation and behaviour, different developmental pathways are responsible for the interpersonal-affective and social deviance facets (Blonigen, Hicks, Krueger, Patrick & Iacono, 2006). The first variant, primary psychopathy, is underpinned by a heritable affective deficit, corresponding to low stress reactivity, an agenic interpersonal style and a core weakness in defensive (fear) reactivity. Secondary psychopathy reflects an environmentally acquired affective disturbance, characterised by an impulsive-aggressive behavioural style, and a weakness in inhibitory control systems (Hicks & Patrick, 2006; Skeem, Johansson, Andershed, Kerr & Louden, 2007).

Skeem and colleagues found that by using the PCL-R a group of violent, psychopathic offenders could be segregated into subgroups that paralleled primary and secondary psychopaths. Secondary psychopaths showed greater trait anxiety, more features of borderline personality disorder, poorer interpersonal functioning, poorer clinical functioning, and were more emotionally unstable and withdrawn than primary psychopaths. Similarly, secondary psychopaths have been found to be characterised by severe alcohol and drug dependence and significantly elevated anxiety, while primary psychopaths were characterised by

a higher number of violent crimes and average levels of anxiety (Vassileva, Kosson, Abramowitz & Conrad, 2005). Interestingly, distinctions between primary and secondary psychopaths have been replicated in studies using subclinical populations and self-report measures of psychopathy (e.g. Falkenbach, Poythress & Creevy, 2007; Ray, Poythress, Weir & Rickelm, 2008). That similar findings occur over sample groups and assessment methods suggests the validity of this dual deficit model. In addition, there is some evidence to indicate that whilst the interpersonal-affective aspects of psychopathy remain stable in early adulthood (i.e., approximately between the ages of 17-24), the impulsive-antisocial aspects decline (Blonigen, Hicks, Krueger, Patrick & Iacono, 2006).

Further work on the structure of psychopathy has examined whether these individuals are members of a 'discrete natural class' (Harris, Skilling & Rice, 2001), or whether they are representative of the extreme end of the continuum of personality traits. Strong support for the dimensional nature of the psychopathic personality in relation to all four facets has been discovered (Edens et al., 2006; Marcus, Johns & Edens, 2004). This finding has important implications in terms of etiology and treatment. Marcus, Johns and Edens (2004) posit that psychopathy is likely to have a multifactor etiology, and may represent a configuration of extreme scores on several continuously distributed personality dimensions, as discussed above.

Although many people who display psychopathic characteristics do come into contact with the legal system at some point in their life, there has been some support found for the concept of 'successful' psychopaths (DeMatteo, Heilbrun & Marczyk, 2005). This group included non-criminals who displayed moderate

levels of psychopathy and a history of violent behaviour. They contended that there may be a range of protective factors that relate to the number of criminal convictions obtained by a psychopathic sample, arguing that while both groups engaged in high levels of illegal behaviour, the 'successful' group were less likely to be convicted for such behaviour. These protective factors included strong family relations, involvement in organised religion, participation in structured activities, exposure to positive role models, social supports, steady employments and reading ability.

Psychopathy and Aggression

Although not specifically detailed in Cleckley's features of psychopathy, many researchers have noted the connection between high levels of psychopathic characteristics and aggressiveness. Hare (2006, citing Harris, Rice and Camilleri, 2004) contends that psychopathy is in fact one of the 'most important causes of aggression'.

Cornell and colleagues (1996) assert that instrumentally violent male offenders possess significantly higher psychopathy scores across both Factor 1 and Factor 2 of the PCL-R than do reactively violent male offenders. They report that while both offender groups were likely to engage in reactive violence, instrumental violence (violence with a secondary aim) may be an additional characteristic of psychopathic offenders. On the other hand, Walsh and Kosson (2008) found that high scores on Factor 2 (behaviour) was a stronger predictor of violence than high Factor 1 (personality) scores. However they also noted that the predictive power of Factor 2 was attenuated at low levels of Factor 1, and

accented at high levels of Factor 1. This also indicates that the absence of empathy and affective responses may be important in predicting violence.

One criticism of many of the studies concerning aggression and psychopathy is that participants are often selected from an offending population. By definition these individuals display elevated levels of the behavioural factor of psychopathy. A recent study concerning community samples of women has found that aggressive women were no more psychopathic than a group of impulsive women and controls (Crawley & Martin, 2006). Interestingly however, they found that impulsive-aggressive women obtained significantly higher (although still in the subclinical range) scores on the each of the psychopathy factors.

Numerous theories have been proposed to explain the consistent association between psychopathic characteristics and increased levels of aggressive behaviour. Psychopaths have been found to experience difficulty recognising and experiencing distress emotions and affective information, such as sadness (Reidy, Zeichner & Foster, in press). Abnormal startle reactivity has also been found (Patrick 1994), providing support for the theory that psychopaths possess low levels of anxiety or fear. Fear has been implicated as important for inhibiting aggressive behaviour, especially in situations where provocation is present (Campbell 2006).

An alternative explanation that has been proposed is that psychopaths possess a hostile attribution bias, that is, they are more likely to attribute hostile intent to the actions of other people, even when no hostile intent is present. Serin (1991) found initial evidence that when provocation was considered, psychopaths did differ in terms of their attribution styles. However, this finding was not

replicated when applying the Five Factor Model of personality to psychopathy (Miller & Lynam, 2003). According to the Five Factor Model, psychopaths can be characterised by a mixture of low Agreeableness and Conscientiousness, high Extraversion, and a combination of low and high Neuroticism (low anxiety, depression, vulnerability to stress and self-consciousness, but high angry hostility and impulsiveness). Miller and Lynam found that although psychopathic individuals did not display a hostile attribution bias, they were observed to generate more aggressive responses, and were more likely to choose an aggressive response.

Seagar (2005), in an attempt to integrate the literature, investigated the role of impulsivity and hostile schemas. He noted that psychopaths have developed self-schemas via a social learning process that predisposes them to make hostile attributions regarding other people's behaviour. According to Seagar, a psychopath's aggression may be derived from perceptions that they are constantly under threat from others. As such, they would not be disposed to being emotionally distraught at other people's distress. Psychopaths may indeed be reacting to a perception of reality as 'survival of the fittest'.

A third rationale for aggression in psychopaths is the relatively new idea that people who have inflated and unstable self esteem use aggression as a means of protecting their image (Bushman & Baumeister, 1998). According to this model, narcissistic individuals are those who possess grandiose self-concepts, an inflated sense of entitlement and a tendency toward establishing superiority. When the individual's inflated but unstable self-esteem is threatened (such as through insult or shame) they become aggressive in an effort to protect their image. The higher the level of narcissism, the more likely it is that threats to self

esteem will be judged as unacceptably low (Anderson & Bushman, 2002). Cale and Lilienfeld (2006) extended this theory to psychopaths and found partial support for this model, suggesting that it warrants further investigation.

As previously discussed, one of the classical features of psychopathy is a high level of impulsiveness, relating especially to the behavioural components measured by Factor 2 of the PCL-R. While psychopaths may be more likely to act aggressively with an instrumental motive than non-psychopaths, they clearly demonstrate high levels of impulsive or reactive aggression (e.g. Hare 1996; Seagar, 2005; Serin, 1991). Thus, they are at a double disadvantage when it comes to self control of behaviour, not only are they predisposed to attribute hostile intentions to others' behaviours, and perhaps feel it necessary to protect their high but unstable self-esteem, they also lack the ability to inhibit their initial reaction to appraisals for a more thorough reappraisal to occur.

A notable criticism of the literature in this area is that while theory supports the notion that psychopathy is a dimensional construct, that is, that individuals may be located at any point along the continuum between low and high psychopathic characteristics, investigations typically focus on offenders with a history of violent behaviour and high levels of psychopathic traits. There is currently a dearth of literature investigating whether the link between impulsive-aggressiveness and psychopathic characteristics is linear in nature, or whether they co-exist only at clinically significant levels.

Clinician Ratings versus Self-Report

Traditionally, clinician rated measures of psychopathology have been viewed as the most reliable and valid methods of assessing levels of functioning.

Various reasons have been posed for this, from the potential for social desirability influences on responding, 'faking good' or 'bad' for secondary gain, and the necessity for a high level of comprehension regarding the construct being measured. The rating system used in the PCL-R and its derivatives (PCL:SV, P-Scan & PCL:YV) require that the rater has a good theoretical understanding of the features of psychopathy. Restricting (generally) their use to mental health professionals with specific training in administration has been thought to increase accuracy and inter-rater reliability.

Criticisms of Hare's measurement model have been made however. The first criticism is that the PCL-R and its derivatives are extremely time consuming to administer and score, as two separate data sources must be gained (interview and collateral sources). Secondly, restricting its usage may place further pressure on an already over-taxed system. Thirdly, although specific training is highly recommended, scoring ultimately relies on the clinical judgement of the rater. Recent data suggests that inter-rater agreement (in violent sexual predator cases) may be lower than anticipated, with as much as 30% of the variance in total PCL-R scores attributable to evaluator differences, and a further 20% of variance to adversarial allegiance (Boccaccini, Turner & Murrie, 2008). Finally, emerging evidence supporting a dimensional, rather than taxonic structure of psychopathic personality suggests that the cut-off scores used to rate the PCL-R may lead to an arbitrary and conceptually flawed categorical approach to measurement (Edens, Lilienfeld, Marcus & Poythress, 2006; Marcus, Johns & Edens, 2004). An extension of this categorical system is that the PCL-R does not have the sensitivity required to measure low-level psychopathic traits that, according to

the dimensional model, should be present within a non-clinical, non-forensic population.

Self-report measures of psychopathology have a long history of valid and reliable use in relation to the identification and treatment of DSM-IV Axis I disorders (such as depression and anxiety). In 1988 Hare assembled the Self-Report Psychopathy Scale (SRP), with the intention to identify the 'successful psychopath', an individual who may display the personality features of psychopathy without necessarily engaging in criminal behaviour. In addition to being more time and resource efficient, the SRP was closely theoretically aligned with the PCL-R. A revision occurred in 1985 (SRP-II), however this version was not found to be a good fit with the new four facet model of psychopathy, especially with regards to Factor 1 (Benning, Patrick, Salekin & Leistico, 2005; Derefinko & Lynam, 2006; Williams & Paulhus, 2004). Other self-report measures, such as the Psychopathic Personality Inventory (Lilienfeld & Andrews, 1996) also appear to differentially correlate with the PCL-R personality factors, and other measures of abnormal personality (Benning et al., 2005; Williams & Paulhus, 2005).

In response, the Self-Report Psychopathy scale has been further refined (SRP-III, Paulhus, Hemphill & Hare, in press). Whilst this version is yet to be extensively utilised in psychopathy research, it appears to parallel the factor structure of the PCL-R with four distinct but inter-correlated factors (Williams, Paulhus & Hare, 2007), and has also been shown to be a reliable and valid measure of subclinical psychopathy (Williams, Nathanson & Paulhus, 2003).

Directions for future research

Evidence has been presented in the current review indicating that the personality traits associated with impulsive-aggressiveness are implicated in many clinically significant problems, even when the individual has the ability to control their actions and is not functioning within the criminal or clinical systems.

One example was the finding that females identified as higher on impulsivity and aggressiveness than their peers also displayed higher scores on a clinician rated measure of psychopathy, the P-Scan (Crawley & Martin, 2006). However, this instrument is not restricted in use to clinical professionals, and little research has been conducted into the validity and utility of this beyond a screening measure identifying areas for further investigation.

Recently, self-report measures such as the SRP-III have begun to be marketed as an inexpensive, time-efficient way of identifying those with elevated psychopathy traits, particularly within a subclinical population. It would be prudent for further research to be directed toward confirming the relationship between impulsiveness, aggressiveness and psychopathic characteristics in a sample of non-clinical, non-forensic undergraduates. A second area for future research may focus examining the utility of self-report measures in psychopathy research, and ultimately their use as a screening tool for early identification of individuals for treatment.

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Empirical Study

An Investigation of the Relationship between Impulsivity, Aggressiveness and Psychopathic Characteristics in a Subclinical Population

Abstract

The present study investigated the role of impulsivity and aggressiveness in subclinical psychopathy within an undergraduate university sample. One hundred and fifty three participants (122 female, 28 male, 3 gender unidentified) completed self-report measures in the areas of impulsivity, aggressiveness and psychopathy. Correlation analysis and stepwise regression models were constructed in accordance with the aim of the study, which was to clarify the role of impulsivity and aggressiveness in psychopathic characteristics, and to determine the utility of self-report measures in psychopathy research. The results of the study supported the hypothesis predicting a positive relationship between impulsivity, aggressiveness and psychopathy scores, and that high levels of both impulsivity and aggression were a better predictor of psychopathy scores than either impulsivity or aggressiveness alone. Partial support was received for the hypotheses predicting differential relationships between components of impulsivity, aggressiveness and psychopathy. Specifically, impulsivity scores were found to significantly correlate with the erratic lifestyle scale. However, a significant negative relationship was not found between empathy scores and callous affect scores, contrary to predictions. Post hoc stepwise regression was undertaken to examine which, if any, aspects of impulsivity and aggressiveness were predictive of aspects of psychopathy. The results of the post hoc analysis were discussed with reference to current theories regarding the nature of psychopathy.

The personality traits of impulsivity and aggressiveness have been consistently linked to psychopathology and antisocial behaviours in individuals, especially when both are present. Impulsive-aggressiveness (also known as reactive or hostile aggression) refers to the tendency toward rapid, unplanned aggressive acts that are out of proportion to the provocation (Barrett, Stanford, Dowdy, Liebman, & Kent, 1999). People who engage in impulsive-aggressive acts are often noted to have a 'short fuse'. According to theorists, impulsive-aggressiveness can be differentiated from another form of aggressiveness, premeditated aggressiveness, due to the significant emotional component inherent in its expression. Premeditated aggressiveness on the other hand, involves a purposeful and goal directed aggressive act, with little emotional involvement. These two forms of aggressive action are thought to be distinct entities. As such an individual, while potentially predisposed toward one type of aggression, can engage in both impulsive and premeditated aggressive acts. Indeed, one of the criticisms of this method of classifying aggression is that often a single act of aggression can be observed to have multiple motives, and that a single aggressive act may have both reactive and proactive motivations (Anderson & Bushman, 2002; Miller & Lynam, 2006).

Despite this criticism, it is clear that impulsivity does play an important role in the expression of aggressiveness. Impulsivity can be defined as the tendency to act on the spur of the moment, without consideration of the consequences of such action (Campbell, 2006; Plutchik & van Praag, 1995). Eysenck, Pearson, Easting and Allsopp (1985) contend that impulsivity encompasses two related constructs, impulsiveness, which refers to the tendency to act without regarding the possible consequences, and venturesomeness, which

refers to taking action despite the acknowledgement of potential risks. Impulsively aggressive individuals have been found to have impaired social information processing abilities relative to other people (Crick & Dodge, 1994). They tend to be more characteristically irritable than non aggressive people (Stanford, Greve & Dickens, 1995) and in addition appear to make more mistakes when attributing intent to other people's behaviour, especially in ambiguous situations when the motives of the other person are not immediately clear. These errors, coupled with their tendency toward action without consideration of possible consequences leads to a rapid, automatic appraisal of a situation as hostile, and subsequently a difficult to control impulse to strike out in a pre-emptive fashion at the perceived threat (Dodge & Schwartz, 1997, cited in Miller & Lynam, 2003).

Anderson and Bushman (2002) note that impulsivity may further affect aggression in that impulsive individuals are more likely to act on their immediate appraisals of situations without investing resources in more effortful reappraisals, which serve to provide an alternative view of a situation (Anderson & Bushman, 2002). This effect is noted to be more pronounced when provocation is present within an interpersonal exchange (Bettencourt, Talley, Benjamin & Valentine, 2006).

One important point to note however is that even this well researched and accepted explanation of impulsive aggressiveness is relatively simplistic, and does not take into consideration the full range of individual factors that are implicated in every action, thought or feeling a person engages in. Other traits, such as self-regulation, fear, and moral development also display individual differences. Thus, the complex interaction of particular levels of different traits

not only indicates the extent to which an individual will engage in impulsive aggression, but also explains why different behaviour will occur in different situations for the same individual.

With few exceptions, studies investigating impulsive-aggression have used as the selection criteria the presence of an impulsive-aggressive act, usually within a male criminal sample (e.g. Kockler et al., 2006; James & Seager, 2006). One issue with this approach is that the experimental sample is already skewed toward displaying an unusually high level of impulsivity and aggression and potentially low levels of self control compared to the general population. As such, results of these studies cannot be generalised further than the group under investigation.

A further problem with this traditional characterisation of groups is that it presumes that impulsivity and aggressiveness are categorical constructs, that an individual is either impulsive or not, or aggressive or not. Current thinking in relation to personality traits posits that individuals display a level of each trait (such as impulsivity or aggressiveness) to a greater or lesser extent along a continuum. Thus, the diverse range of human reactions in similar situations can be accounted for by the complex interaction of each level of each personality trait they experience (Anderson & Bushman, 2002; Campbell, 2006; Loeber & Hay, 1997).

The tendency for most researchers to ignore the dimensional nature of impulsivity and aggressiveness has led to the implicit hypothesis that individuals who do not display overt impulsive or aggressive behaviours function in a healthy, adaptive manner in society. However, very few studies to date have investigated the characterological tendencies toward impulsive-aggressiveness

and its links with personality and psychopathology in a non-criminal, non-clinical sample, and as such this hypothesis remains relatively untested.

Crawley and Martin (2006) undertook a series of studies to investigate whether a distinct subgroup of impulsive and aggressive females could be detected, and if so, what features set this group of women apart from their peers. Crawley and Martin found that a group of undergraduate females could be meaningfully distinguished from their peers on the basis of high scores on a measure of aggressiveness (the Aggression Questionnaire; Buss & Perry, 1992) and a measure of impulsiveness (I7 Impulsiveness Questionnaire; Eysenck, Pearson, Easting & Allsopp, 1985). They discovered that impulsive-aggressive females were significantly more likely than their peers (including impulsive only, aggressive only and non-impulsive, non-aggressive females) to have experienced a range of emotional and behavioural issues, including problematic substance use, school suspensions, involvement in both childhood and adult fighting, being in trouble with police, to have faced criminal charges and to have engaged in undetected illegal activity.

In addition, impulsive-aggressive females were found to yield significantly higher scores on a clinician administered rating of psychopathy (Crawley & Martin, 2006). This effect was noted on each of the three subscales of the PScan, namely the interpersonal, affective and lifestyle facets of psychopathy.

Impulsivity and aggressiveness have been linked to higher levels of psychopathy in many samples, criminal and non-criminal, and in both males and females (Hare, 2003). Psychopathy is a personality disorder that is characterised by a 'constellation of affective, interpersonal and behavioural characteristics,

including egocentricity, irresponsibility, shallow emotions, lack of empathy, guilt or remorse, pathological lying, manipulativeness, and persistent violation of social norms and expectations' (Hare 1996, p 25). Work carried out by Hare and other researchers has indicated that psychopathy is in fact a non unitary 'higher order' construct, encompassing four separate, but related, abnormalities (see Hare, 2003; Lilienfeld & Fowler, 2006; Neumann, Hare & Newman, 2007; Patrick, Hicks, Nichol & Krueger, 2007 for a review). These facets include interpersonal manipulation and callous affect, while the behavioural component is typified by an impulsive, thrill seeking lifestyle and antisocial behaviour (Hare, 2003; Neumann, Vitacco, Hare & Wupperman, 2005).

Further research testing this model of psychopathy has led to the proposition that two subtypes of psychopathy exist. Primary psychopaths demonstrate higher scores on the interpersonal-affective (personality) components of psychopathy, while secondary psychopaths display elevated levels on the two facets measuring socially deviant behaviour (Blonigen, Hicks, Krueger, Patrick & Iacono, 2006). According to theorists, primary psychopathy is underpinned by a heritable affective defect regarding stress and fear responses. Secondary psychopathy on the other hand, reflects an environmentally acquired affective disturbance, characterised by an impulsive-aggressive behavioural style, and a weakness in inhibitory control systems (Hicks & Patrick, 2006; Skeem, Johansson, Andershed, Kerr & Louden, 2007). Secondary psychopaths have been found to experience a range of problems with emotional and behavioural functioning that are not seen in primary psychopaths, including more features of borderline personality disorder, poorer interpersonal functioning, poorer clinical functioning, and a tendency to be more emotionally unstable and

withdrawn than primary psychopaths. Similarly, secondary psychopaths have been found to be characterised by severe alcohol and drug dependence and significantly elevated anxiety, while primary psychopaths tend to be characterised by a higher number of violent crimes and average levels of anxiety (Skeem, Johansson, Andershed, Kerr & Louden, 2007; Vassileva, Kosson, Abramowitz & Conrad, 2005).

This dual model has been replicated in studies using clinical and subclinical populations, as well as clinician rated and self-report measures of psychopathy (e.g. Falkenbach, Poythress & Creevy, 2007; Ray, Poythress, Weir & Rickelm, 2008). In addition, recent work has suggested that similar to impulsivity and aggressiveness, psychopathy is likely to have a multifactor etiology, and may represent a configuration of extreme scores on several continuously distributed personality dimensions, rather than a categorical group of individuals (Edens, Lilienfeld, Marcus & Poythress, 2006; Marcus, Johns & Edens, 2004).

As previously stated, psychopathy has long been associated with high levels of aggressive behaviour (Hare, 2006). Traditionally individuals displaying psychopathic characteristics have been conceptualised as coldly and calculatingly aggressive, and that a lack of empathy coupled with an inflated sense of entitlement leads to psychopaths carrying out aggressive behaviours in order to gain what they want from others (Cleckley, 1941). It is becoming clear however that psychopaths not only engage in premeditated aggression more than do the general population, but also display a significantly elevated level of general impulsivity which increases their level of impulsive-aggressiveness as well. As reported above, Crawley and Martin (2006) noted that impulsive-aggressive

females obtained significantly higher scores on a measure of psychopathy than did other females. Currently there is debate surrounding whether this effect is consistent across each of the psychopathy dimensions (personality and behavioural) as found by Crawley and Martin (2006), or whether the extent to which impulsive-aggressiveness present is mediated by scores on the personality dimensions (e.g. Walsh & Kosson, 2008).

Although these findings in relation to impulsivity, aggressiveness and psychopathy are extremely relevant for our understanding of the nature of human emotions and behaviour, one criticism of the literature in this area is that there are few well developed and standardised measures of the dimensional personality traits of impulsivity, aggressiveness or psychopathy. The majority of the research in this area appears to rely on a system of classification of type of aggressive act (impulsive or premeditated).However, given what is known (that each individual falls somewhere along a continuum and may therefore be potentially both impulsively and premeditatively aggressive) it is contended that many of these studies are methodologically flawed. In terms of measurement of psychopathy, only one clinician-administered rating system – the Psychopathy Checklist-Revised, now in its second revision, (PCL-R: 2nd Ed, Hare 2003) has been extensively researched. While this measure does go some way toward allowing an examiner to determine how psychopathic an individual is, as opposed to whether they are or are not a psychopath, it is both a time and labour intensive tool to utilise for research purposes. It can also be contended that traditional research methods such as these which involve categorising past actions and utilising measures designed for a clinically significant population may further skew the data relating to the dimensional nature of personality traits.

One solution to these problems may be to invite research participants to self-report personality traits. Self-report has been utilised extensively in relation to clinical problems such as anxiety and depression, and one advantage that many of these instruments possess is the ability to detect low levels of disordered functioning in relatively well functioning individuals. As such self-report measures have the ability to add to the knowledge base concerning low levels of disordered functioning, in this case impulsivity, aggressiveness and psychopathy.

Thus, the aim of the current study is to further clarify the strength of the relationship between impulsivity, aggressiveness and psychopathic characteristics. In particular, this study aims to add to the current literature and clarify the assumption underpinning current thinking about the role of impulsivity and aggressiveness within the psychopathy literature. A further aim of the current study is to comment on the utility of self-report measures in future psychopathy research. In order to achieve this, this study will utilize the I7 Impulsiveness Questionnaire (Eysenck, Pearson, Easting & Allsopp, 1985), the Buss-Perry Aggression Questionnaire (Buss & Perry, 1992), and Self-Report Psychopathy-III scale (SRP-III, Paulhus, Hemphill & Hare, in press). Each of these measures has been developed for use in a non-clinical, non-forensic population.

Four hypotheses were proposed for the current research:

1. In line with previous research, it is hypothesized that as scores for impulsivity and aggression increase, psychopathy (as measured by scores on the SRP-III) will also increase.
2. Based on the findings of Crawley and Martin (2006), it is expected that a stronger relationship will be found between psychopathy scores and

combined impulsivity and aggression scores than will be found between psychopathy scores and impulsivity scores alone, or psychopathy scores and aggression scores alone.

3. Based on the findings of Crawley and Martin (2006) I7 impulsivity scores and scores on the erratic lifestyle subscale of the SRP-III are expected to yield a positive correlation.
4. Based on the literature regarding the role of empathy in psychopathy, a negative correlation is expected to occur between scores on the I7 Empathy scale and SRP-III callous affect scores.

Method

Design

The current study followed a correlational, survey design. The outcome variable was total SRP-III score and scores on each of the four psychopathy subscales, which are specified below. The predictor variables for the current study were total scores and subscale scores on the I7 Impulsiveness Questionnaire, total scores and subscale scores on the Buss Perry Aggression Questionnaire.

Participants

One hundred and seventy four undergraduate psychology students were recruited (139 female, 32 male, three gender unidentified) for this study. Participants ranged in age from 18-45 years old (mean age = 22.9 years, standard

deviation = 7.99). Participants were allocated twenty minutes of course credit for their participation.

Materials

Three psychometric tools were utilised in this study to measure impulsivity, aggressiveness and psychopathy.

I7 Impulsiveness Questionnaire (Eysenck, Pearson, Easting & Allsopp, 1985)

This 75 item scale measures impulsiveness (e.g., 'do you often do things on the spur of the moment?'), venturesomeness (e.g., 'do you quite enjoy taking risks?') and empathy (e.g., 'do you get very upset when you see someone cry?'). Participants rate each item 'yes' or 'no' based on whether the statement is 'mostly true' of them. Some of the items are worded in the opposite direction to counter response direction bias. Scores from the impulsiveness and venturesomeness subscales can also be combined to form a general impulsivity score.

Based on the findings of Crawley and Martin (2006) the lie scale from the Eysenck Personality Questionnaire (Eysenck & Eysenck 1975) was embedded within the I7 Impulsiveness Questionnaire during the current study to provide a measure of social desirability responding. Participants who obtained scores of 12 and above on the lie scale were excluded from the analysis.

Buss-Perry Aggression Questionnaire (Buss & Perry, 1992)

This is a 29-item self report measure designed to assess the components of aggression. Participants are required to rate each item on a 1 to 5 scale, where

1 = 'extremely uncharacteristic of me' and 5 = 'extremely characteristic of me'. The questionnaire has four subscales: physical aggression, verbal aggression, anger and hostility. The physical aggression and verbal aggression subscales measure the behavioural components of aggression, which involve hurting or harming other individuals. The anger subscale measures physiological arousal and preparation for aggression, which represents the emotional or affective component. The hostility subscale investigates the individual's feelings of ill will or injustice, representing the cognitive component of aggression. The scoring of two items ('I can think of no good reason for ever hitting a person' and 'I am an even tempered person') has been reversed.

Self-Report Psychopathy Scale-III (Paulhus, Hemphill & Hare, in press)

This 64 item self-report scale was developed as a measure of psychopathic characteristics, particularly within a subclinical population. The scale is comprised of four subscales, which are designed to align with the four facet model of psychopathy (Hare, 2003; Neumann et al., 2005). The subscales include: interpersonal manipulation (e.g., 'I purposely flatter people to get them on my side'), callous affect (e.g., 'I don't bother to keep in touch with my family any more'), erratic lifestyle (e.g., 'I've often done something dangerous just for the thrill of it'), and criminal tendencies (e.g., 'I have broken into a building or vehicle in order to steal something or vandalize'). This measure is scored on a 1 to 5 likert scale, with 1 = 'disagree strongly', and 5 = 'agree strongly'.

To control for response bias a number of items in each subscale were worded in a positive direction. An example is 'I feel so sorry when I see a homeless person'.

Procedure

Participants were recruited across both the Hobart and Launceston campuses of the University of Tasmania. The investigator presented a short speech outlining the general aims and requirements of the study during an Introduction to Psychology lecture at the Hobart campus, and a PowerPoint slide was shown during a lecture in the same course in Launceston. This slide also advertised the general aims of the study, the requirements of the participants and the amount of course credit received for participation.

Questionnaire packages were made available to prospective participants during practical classes. These contained a cover page outlining the instructions for completing the questionnaire package. Informed consent was assumed with the completion and return of the package, and participants were able to remain anonymous throughout their involvement.

Completed questionnaires were returned by the participant to a locked box in the Student Administration area of the School of Psychology. These were collected by the investigator and raw data was stored in a locked filing cabinet.

Results

Following transformation of reverse scored items, the raw data was subjected to three statistical procedures. Participants who obtained an EPQ Lie Scale raw score of 12 and above (based on the grand mean generated by Crawley & Martin, 2006) were excluded from the analysis (17 female, 4 male), leaving 153 participants in the analysis (122 female, 28 male, 3 gender unidentified). A reliability analysis was performed to examine the internal consistency of each of the measures used in the study. Second, correlation analyses were conducted to

examine the relationships both within and between the three measures. Finally, a stepwise regression analysis was conducted to examine the contribution that aspects of impulsivity and aggressiveness made to participants' psychopathy scores. Means and standard deviations for each of the three measures can be found in Table 1.

Table 1

Means and Standard Deviations for the I7 Impulsiveness Questionnaire, the Aggression Questionnaire and the Self-Report Psychopathy Scale-III

Scale/Subscale	Mean	Standard Deviation
Impulsivity Total	17.18	6.27
Impulsiveness	8.96	4.22
Venturesomeness	8.22	3.66
Empathy	13.73	2.72
Lie	7.93	2.01
Aggression Total	65.55	16.08
Physical Aggression	18.27	6.28
Verbal Aggression	13.13	3.86
Hostility	17.73	5.82
Anger	16.52	5.64
Psychopathy Total	142.27	29.97
Callous Affect	37.51	7.35
Interpersonal Manipulation	36.49	9.79
Erratic Lifestyle	41.90	10.46
Criminal Tendencies	26.37	8.90

As can be seen, the highest I7 Impulsiveness Questionnaire mean was found for the empathy subscale, however the greatest spread of scores (standard deviation) across the sample was demonstrated by the impulsiveness subscale. On the Aggression Questionnaire, the highest mean score was obtained on the physical aggression subscale. This subscale also demonstrated a larger standard deviation than did the other three Aggression Questionnaire subscales, indicating a wider spread of scores across the sample. On the SRP-III scale the highest mean was obtained on the erratic lifestyle subscale, which also demonstrated the largest spread of scores across the sample (standard deviation). Across each of the measures, means and standard deviations appeared similar to those reported by the original authors (see Buss & Perry, 1992; Eysenck, Pearson, Easting & Allsopp, 1985; Paulhus, Hemphill & Hare, in press for comparison)

Reliability Analysis

A reliability analysis was conducted with each of the measures of impulsiveness, aggressiveness and psychopathy to measure internal consistency of each scale. Reliability analyses are presented in Appendix A.

I7 Impulsiveness Questionnaire

Alpha coefficients for this scale indicated acceptable internal consistency for the scales of impulsiveness (alpha coefficient = .79) and venturesomeness (alpha coefficient = .80). The coefficient for the empathy subscale was somewhat lower, at .50. The reliability coefficient for the total scale was .76.

Aggression Questionnaire

The four factors and total score on this measure demonstrated acceptable internal consistency. Alpha coefficients were as follows: physical aggression = .81, verbal aggression = .75, anger = .76, hostility = .83, with an overall scale reliability of .89.

Self-Report Psychopathy-III Scale

This scale also demonstrated acceptable internal consistency. The interpersonal manipulation, erratic lifestyle and criminal tendencies scales were all above .70 (alpha coefficients of .83, .82 and .76 respectively). The callous affect subscale demonstrated an alpha coefficient of .65. A high level of internal consistency was demonstrated for the total scale (alpha = .90).

Correlation Analysis

The relationship between the measures of impulsivity, aggression and psychopathy were examined using correlation analysis (Spearman's product moment correlation). The correlation analyses are presented in Appendix B. A significant correlation was found between total scores on the Aggression Questionnaire and the SRP-III, r (151) = .59, p <.001, indicating a high level of association between the two measures. This high level of association was also found between total impulsivity scores (impulsiveness plus venturesomeness) on the I7 Impulsiveness Questionnaire and total scores on the SRP-III, r (151) = .59, p <.001. The correlation coefficients for the relationships between the SRP-III subscales with total impulsivity, aggression and empathy scores can be found in Table 2.

Table 2

Correlations between Self-Report Psychopathy-III subscales and Aggression, Impulsivity and Empathy

	SRP-III Subscales			
	Interpersonal Manipulation	Callous Affect	Erratic Lifestyle	Criminal Tendencies
Aggression	.535*	.511*	.504*	.384
Impulsivity	.424*	.356*	.690*	.417*
Empathy	.004	-.142	-.047	.017

*Correlation significant at the .01 level

As can be seen, aggression scores were strongly and significantly positively related to interpersonal manipulation, callous affect and erratic lifestyle, however aggression did not significantly correlate with criminal tendencies.

Impulsivity was significantly positively related to each of the four SRP-III subscales. A strong correlation was found between impulsivity and erratic lifestyle, with moderate correlations between impulsivity, interpersonal manipulation, callous affect and criminal tendencies. In contrast, empathy scores were not found to significantly correlate with any of the SRP-III subscales.

Regression Analysis

To examine the first research hypothesis stepwise multiple regression was performed, regressing psychopathy scores onto impulsivity and aggression to determine the relative contribution of these factors in the prediction of psychopathy scores. The full regression analysis can be found in Appendix C.

The model indicated that both impulsivity scores (which combines impulsiveness and venturesomeness) and aggression total scores predicted approximately 50% of the variance of psychopathy scores (*adjusted* $R^2 = .496$, $F(2,150)=75.73$, $p<.001$). It was found that impulsivity accounted for 35% of the variance of psychopathy scores ($\beta = .43$; $t(150) = 6.82$, $p<.001$), with aggression accounting for a further 15.4% of the variance ($\beta = .43$, $t(150) = 6.81$, $p<.001$).

The main aim of the current study was to clarify the assumptions regarding the role of impulsivity and aggressiveness in subclinical psychopathy. Current research indicates that each of these three constructs is likely to be multi-dimensional in nature, and as such little useful information can be gained from examining total scores in each area. Given that impulsivity scores and total aggression scores were both found to predict unique variance in psychopathy total scores it was decided to test whether different impulsivity and aggression dimensions were implicated in different psychopathy dimensions. Further stepwise regression models were constructed to clarify which of the I7 Impulsiveness and Aggression Questionnaire subscales were predictive of components of the psychopathy total score, namely interpersonal manipulation, callous affect, erratic lifestyle and criminal tendencies. The significant predictor variables for each SRP-III subscale are shown in Table 3, along with unstandardised *B* coefficients and standardised β coefficients. Each of the regression models is examined in detail below.

Table 3

Significant Predictors of Self-Report Psychopathy Scale-III subscales, Unstandardised Coefficients, and Standardised Coefficients

	Predictor Variable	B	β
Interpersonal Manipulation			
	Physical Aggression	.402	.258*
	Verbal Aggression	.620	.244*
	Venturesomeness	.489	.183*
	Anger	.251	.144*
Callous Affect			
	Physical Aggression	.488	.417**
	Verbal Aggression	.404	.213*
	Empathy	-.436	-.162*
Erratic Lifestyle			
	Impulsiveness	1.061	.428**
	Venturesomeness	.798	.279**
	Physical Aggression	.284	.170*
	Verbal Aggression	.452	.167*
Criminal Tendencies			
	Physical Aggression	.518	.366**
	Impulsiveness	.550	.261**

* $p < .05$ ** $p < .001$

Interpersonal Manipulation

The results of the stepwise regression analysis indicated that three Aggression Questionnaire subscales (physical aggression, verbal aggression and anger) and one I7 Impulsiveness Questionnaire subscale (venturesomeness) predicted 34% of the variance of interpersonal manipulation scores on the SRP-III (*adjusted* $R^2 = .34$, $F(4,148) = 20.78$, $p < .001$). Table 3 displays the significant predictor variables, the unstandardised *B* coefficients, standardised β coefficients and significance values.

According to this model, physical aggression is a significant predictor of interpersonal manipulation scores, accounting for 25% of the variance, $t(148) = 3.11$, $p<.01$). Verbal aggression accounted for a further 5.8% of the variance, $t(148) = 3.04$, $p<.05$, while venturesomeness significantly predicted a further 3.1% of the variance in interpersonal manipulation scores, $t(148) = 2.64$, $p<.05$. Finally anger significantly accounted for a further 1.7% of the variance, $t(148) = 1.98$, $p<.05$. Excluded from this model were the factors of hostility, impulsiveness and empathy.

Callous Affect

The second model was constructed to examine the factors that significantly contributed to scores on the callous affect subscale of the SRP-III. Three variables, physical aggression, verbal aggression and empathy, explained 32% of the variance in callous affect scores (*adjusted* $R^2 = .32$, $F(3,149) = 25.12$, $p < .001$).

Table 3 shows the significant predictors of callous affect, and the standardised and unstandardised beta coefficients. This model indicates that

physical aggression is a significant predictor of callous affect scores, accounting for 27% of the variance, $t(149) = 5.20$, $p<.001$. Verbal aggression accounted for an additional 3.7% of the variance in callous affect scores, $t(149) = 2.66$, $p<.05$. Empathy emerged as a significant negative predictor of callous affect, encompassing a further 2.6% of the variance in scores, $t(149) = -2.41$, $p<.05$, with lower scores on the empathy subscale of the I7 Impulsiveness Questionnaire being predictive of higher scores on the callous affect subscale of the SRP-III, as opposed to the positive direction of the other predictors. Excluded from this model were the factors of hostility, anger, venturesomeness and impulsiveness.

Erratic Lifestyle

Four predictor variables were discovered in this model, accounting for 54% of the variance in erratic lifestyle subscale scores on the SRP-III (*adjusted* $R^2 = .54$, $F(4,148) = 45.89$, $p <.001$). Unstandardised and standardised coefficients can be found in Table 3. Impulsiveness significantly accounted for 37.2% of the variance in erratic lifestyle scores, $t(148) = 7.07$, $p<.001$. Venturesomeness significantly accounted for a further 10.9% of variance, $t(148) = 4.74$, $p<.001$, and physical aggression accounted for a further 5.4% of variance, $t(148) = 2.52$, $p<.05$. Finally verbal aggression significantly accounted for 1.8% of the variance in erratic lifestyle scores, $t(148) = 2.45$, $p<.05$. Excluded from this model were the following variables: verbal aggression, hostility, anger and empathy.

Criminal Tendencies

The final regression analysis was undertaken to determine the predictor variables of the criminal tendencies subscale of the SRP-III. The standardised and unstandardised beta coefficients can also be found in Table 3 for this regression model. Two variables emerged accounting for 25% of the variance in criminal tendencies scores (*adjusted* $R^2 = .25$, $F(2,150) = 25.60$, $p < .001$). Once again physical aggression emerged as a significant predictor, accounting for 19.2% of the variance in criminal tendencies scores, $t(150) = 4.98$, $p < .001$. The second predictor, impulsiveness, accounted for a further 6.3% of the variance in criminal tendencies scores, $t(150) = 3.56$, $p = .001$. Predictor variables excluded from this model include verbal aggression, hostility, anger, venturesomeness and empathy. According to this model, a large amount of the variance (approximately 75%) in criminal tendencies scores was due to factors other than impulsivity and aggression.

Discussion

The current study was undertaken to further investigate the relationship between impulsivity, aggression and psychopathic characteristics in an undergraduate sample. The main aim of the study was to clarify the current assumptions in the literature which point to impulsivity and aggressiveness as playing key roles in the development and expression of psychopathy. A further aim of the study was to examine the utility of self-report measures in psychopathy research.

The results of this study provide support for the hypothesised positive correlation between scores on a measure of psychopathy and scores on measures

of impulsivity and aggression. It was found that total scores on the I7 Impulsiveness Questionnaire (Eysenck, Pearson, Easting & Allsopp, 1985) and the Buss-Perry Aggression Questionnaire (Buss & Perry, 1992) yielded a significant positive relationship with scores on the Self-Report Psychopathy Scale (SRP-III; Paulhus, Hemphill & Hare, in press), indicating that as participants' impulsivity and aggression scores increased, so too did their total psychopathy scores. This supports previous research conducted by Crawley and Martin (2006) who found that impulsive-aggressive females displayed significantly higher scores on a clinician administered measure of psychopathy.

Although this finding is interesting and indicates that there is a relationship between impulsivity, aggression and psychopathy in a subclinical sample, little information regarding how the three personality dimensions relate to each other can be elucidated. Specifically, little information regarding the relative importance of impulsivity and aggression as relating to subclinical psychopathic characteristics would be able to be determined from this finding.

The second hypothesis postulated that a stronger relationship was expected to occur between psychopathy scores and impulsivity and aggression scores than between psychopathy scores and impulsivity scores alone, or psychopathy scores and aggression scores alone. The results of the regression analysis indicated that both impulsivity and aggression were significantly implicated in total psychopathy scores, supporting the hypotheses. It was found that although impulsivity total scores (a combination of impulsiveness and venturesomeness) predicted the largest amount of variance in psychopathy total scores, aggression total scores were found to predict a further significant percentage of psychopathy scores in the sample. This indicates that whilst both

impulsivity and aggression are important, neither personality trait alone is sufficient to adequately predict the level of psychopathic characteristics displayed by the current subclinical sample.

This finding appears to offer partial support for the current theories regarding the link between aggression and psychopathy. Despite its absence in the 'classical' psychopathy definition (see Cleckley, 1941) aggression has been noted to be a core feature of psychopathy, although not an essential characteristic (Hare, 1996). To date, the literature suggests three possible explanations for the finding that psychopathic individuals are more aggressive than non-psychopathic individuals. Interestingly, each of these theories notes the presence of impulsiveness as a factor in aggressive responses, although they each differ in the level of importance assigned to this construct. However Carrasco et al. (2006) demonstrated that impulsivity was the most essential predictor for all types of antisocial behaviour, including theft, vandalism and physical aggression.

The first theory proposes that individuals who experience high levels of psychopathic characteristics also possess deficits in accurate emotion processing. It has been noted that in particular psychopaths have difficulty recognizing and experiencing distress emotions and affective information such as fear or sadness (Reidy, Zeichner & Foster, in press). Patrick (1994) found that psychopaths possessed abnormal startle reactivity, and has suggested that they experience low levels of fear and anxiety compared to the general population. Campbell (2006) has argued that the experience of fear is an important factor in inhibiting aggressive behaviour. Thus, individuals high in psychopathic characteristics may be relatively insensitive to aversive conditioning that occurs during socialisation, and therefore less likely to inhibit their aggressive responses.

The second explanation for the link between aggression and psychopathy focuses on attribution styles and social information processing. It has been suggested that psychopaths are more likely to attribute hostile intent to other people's actions, known as hostile attribution bias, particularly when the person's motives are not immediately clear. According to Seagar (2005; James & Seagar, 2006), psychopaths have developed self-schemas via a social learning process that predisposes them to make hostile attributions regarding other people's behaviour. Seagar proposed that a psychopath's aggression may be derived from perceptions that they are constantly under threat from others. As such, they would not be disposed to being emotionally distraught at other people's distress. He also found that impulsivity was correlated with psychopathy, however queried whether the measure used (the I7 Impulsiveness Questionnaire; Eysenck, Pearson, Easting & Allsopp, 1985) is truly a measure of 'innate physiological propensities for immediate responding or if it is a measure of a behavioural response style that is learned in the social milieu of a person' (Seagar, 2005, p44). Seagar contended that in relation to aggressiveness it is more likely that an individual's learning history reinforces violent responses, which increases the likelihood that an aggressive response will be rapidly selected the next time they feel threatened. Finally, Seagar (2005) hypothesised that psychopaths may be reacting to the world via a 'survival of the fittest' principle.

Whether support has been found for Seagar's hypotheses appears to depend on the model of psychopathy utilised by various researchers. For example, Serin (1991) found evidence for a hostile attribution bias under conditions of provocation when using the Psychopathy Checklist (Hare, 1985). Miller and Lynam (2003) on the other hand, posit that psychopathy can be

conceptualised as a configuration of traits from a model of general personality functioning, the Five Factor Model. According to the Five Factor Model, psychopaths can be characterised by a mixture of low Agreeableness and Conscientiousness, high Extraversion, and a combination of low and high Neuroticism (low anxiety, depression, vulnerability to stress and self-consciousness, but high angry hostility and impulsiveness). Miller and Lynam note that this model resolves some of the issues surrounding the underlying factor structure of the Psychopathy Checklist. They found that psychopathic individuals did not display a hostile attribution bias, although they were observed to generate more aggressive responses, and were more likely to choose an aggressive response.

The final explanation for the relationship between aggression and psychopathy can be posited to exist within Anderson and Bushman's integrative General Aggression Model (2002). According to this model aggression is developed over the lifespan through a combination of compelling and inhibiting factors, including inputs, arousal routes and outcomes of underlying appraisals and decision processes. Impulsive individuals are more likely to act on the immediate appraisal of a situation, and lack the ability to make more effortful reappraisals where alternative views of a given situation are considered.

Anderson and Bushman (2002) refer to the work of Bushman and Baumeister (1998) who posit that individuals with inflated or unstable self esteem use aggressive behaviour as a means of image protection and enhancement. Narcissistic and psychopathic individuals possess grandiose self concepts, inflated sense of entitlement and have a tendency to attempt to establish superiority over others. When these characteristics are threatened (for

example through shame or insult) psychopaths become aggressive in an attempt to protect their image. According to Anderson and Bushman, the higher the level of narcissism, the more likely it is that a threat to their image will be judged as unacceptable. This explanation has found partial support in a psychopathic sample (Cale & Lilienfeld, 2006).

Traditionally, psychopathy has been conceptualised as a unitary construct. This view holds that a 'psychopath' is an individual fundamentally different from the general population (for example Cleckley, 1941, Hare, 1996). However, many researchers have found evidence suggesting that the construct of 'psychopathy' in fact represents a relatively heterogeneous group of individuals who display deficits on a number of related, but distinct traits. The current focus of the literature indicates that there are potentially two 'types' of psychopath, primary and secondary, with primary psychopaths displaying more dysfunction on the personality facets, and secondary psychopaths more behavioural problems (for example Blonigen, Hicks, Krueger, Patrick & Iacono, 2006; Hicks & Patrick, 2006; Skeem, Johansson, Andershed, Kerr & Louden, 2007; Vassileva, Kosson, Abramowitz & Conrad, 2005).

Given this evidence, the third and fourth hypotheses in the current study predicted that different aspects of the impulsiveness measure utilised would differentially relate to each of the subscales on the measure of psychopathy. Specifically, it was hypothesised that the I7 impulsivity scores and scores on the erratic lifestyle subscale of the SRP-III would yield a positive correlation, and that a negative correlation would be found between scores on the I7 empathy scale and SRP-III callous affect scores.

The results of the current study provided partial support for the theory that different aspects of impulsivity as measured by the I7 Impulsiveness Questionnaire differentially relate to facets of psychopathy as measured by the SRP-III. It was found that impulsivity scores did significantly and largely correlate with the SRP-III erratic lifestyle subscale. The impulsivity score in this sample was also noted to be significantly correlated with each of the SRP-III subscales of interpersonal manipulation, callous affect and criminal tendencies, although these were medium level correlations.

This finding suggests that in the current sample of non-clinical, non-forensic undergraduates, the construct of impulsivity, defined as unplanned reactions to stimuli (impulsiveness) without regard to the negative consequences to the individual or others, in addition to engaging in risky behaviours (venturesomeness) appears to be implicated within all aspects of psychopathy, as measured by the SRP-III. This supports the work of others who have found that psychopaths clearly demonstrate high levels of impulsive or reactive aggression (e.g. Hare 1996; Seagar, 2005; Serin, 1991) in addition to being more likely to be instrumentally aggressive. Specifically, individuals with high levels of psychopathy are potentially predisposed to attribute hostile intentions to others' behaviours, and perhaps feel it necessary to protect their high but unstable self-esteem. In addition, they lack the ability to inhibit their initial reaction to appraisals for a more thorough reappraisal to occur, thus being at high risk for aggressive behaviour to occur.

The empathy subscale on the other hand was not found to significantly correlate with any of the SRP-III subscales, despite the hypothesis that a negative correlation would be found with the callous affect subscale. Thus, in the current

sample empathy as captured by the I7 Impulsiveness Questionnaire and empathy as defined in the SRP-III do not appear to be conceptually related. According to Williams, Paulhus and Hare (2007) the callous affect subscale relates to 'low empathy and a general lack of concern for other people'. Empathy in the I7 Impulsiveness Questionnaire appears to be measuring a somewhat narrower construct, namely 'the tendency to identify feelings of another person' (Carrasco, Barker, Tremblay & Vitaro, 2005). An explanation for this finding has been proposed by Thornton and Thornton (1995), who argue that empathy is a multidimensional construct, comprised of five conceptually distinct and largely uncorrelated dimensions. They noted that Eysenck and Eysenck's 1978 definition of empathy, from which the empathy subscale on the I7 Impulsiveness Questionnaire is taken, related primarily to only one of the five facets they uncovered. Thus, it is possible that the callous affect and the empathy subscales are actually measuring different aspects of the broader empathy construct, and therefore are not expected to significantly correlate with each other. Crawley (2004) also found that undergraduate females with high psychopathy scores were not significantly less empathic than undergraduate females with low psychopathy scores, supporting the theory that these concepts are not related.

In an attempt to clarify the mixed findings of the correlation analysis regarding individual subscales, a post hoc regression analysis was performed to determine which, if any, of the I7 Impulsiveness and Aggression Questionnaire subscales predicted scores on the subscales of the SRP-III. Of particular note was the finding that the physical aggression subscale predicted each of the four SRP-III subscales (interpersonal manipulation, callous affect, erratic lifestyle and criminal tendencies) and verbal aggression was found to predict each of the SRP-

III subscale scores with the exception of criminal tendencies. That different forms of aggression are predictive of subclinical levels of psychopathy makes sense given the link between aggression and psychopathy often found in the literature, as discussed previously.

The regression analysis also showed that impulsiveness and venturesomeness significantly predicted only the scores on the lifestyle facets of the SRP-III (erratic lifestyle and criminal tendencies), and not those facets related to the personality aspects of psychopathy (callous affect and interpersonal manipulation). This finding lends weight to theories that psychopathy is comprised of two distinct but related factors: Factor 1 reflecting a 'core weakness in defensive (fear) reactivity, and Factor 2 to an impulsive-aggressive (externalising) behavioural style...and a basic weakness in inhibitory control systems' (Hicks and Patrick, 2006, p 284). This distinction is an important one, as researchers have found that despite the links between aggression and all aspects of psychopathy, individuals who obtain higher Factor 1 scores are more likely to engage in instrumental aggression (aggression with a secondary aim) as well as reactive aggression (Cornell et al., 1996). Similarly, Walsh and Kosson (2008) found that while Factor 2 was overall a stronger predictor of violent behaviour, this was attenuated at low levels of Factor 1, and accented at high levels.

A further finding from the current study was that anger predicted only interpersonal manipulation, and no other psychopathy subscale. In addition, hostility was not found to significantly predict psychopathy (as measured by the SRP-III) at all in this sample. Anderson and Bushman (2002) contend that while anger (representing the emotional or affective component of aggression; Buss &

Perry, 1992) is an important component of aggressive behaviour, it is not sufficient to create an action, nor is the presence of hostility, which encompasses the cognitive component of aggression (Buss & Perry, 1992). While on the surface this result is counter-intuitive, it is important to recall that psychopaths are not conceptualised as being significantly more angry or hostile than the general population. Rather, their aggressive behaviour comes from a combination of inadequate social judgements, social learning, behavioural inhibition and desire to engage in ego protection, as well as potentially controlling other people or achieving a goal (Cale & Lilienfeld, 2006; Hare, 1996; James & Seagar, 2006, Seagar, 2005)

Perhaps most interesting is the results of the post hoc regression analyses which indicated that empathy was predictive of only one of the four SRP-III subscales (callous affect) in this sample. The callous affect subscale appears to reflect deficiencies in affect that include remorse, guilt and empathy (Williams, Paulhus & Hare, 2007). This suggests that while the I7 Impulsiveness Questionnaire conceptualisation of empathy does not appear to be correlated with the callous affect subscale, it does still act as a significant predictor within this sample. Reidy, Zeichner and Foster (2009) contend that it may be the inability to experience and recognise distress emotions (such as sadness) in others that interfere with the development of empathy, as this deficit leads to increased risk for instrumentally aggressive and antisocial behaviour.

Thus, the results of the current study appear to reflect those of other researchers who have determined that impulsivity and aggressiveness are important components of psychopathy. However, it appears that the concept of a 'psychopath' may in fact be more accurately viewed as being non-unitary in

nature, instead representing a constellation of personality and behavioural deficits which have different developmental pathways and therefore treatment options. Overall, as impulsivity and aggression increases, so too does the level of psychopathic features an individual displays. Which psychopathic characteristics an individual manifests appears to depend upon the level of specific impulsivity and aggressiveness traits they display, whether that is impulsiveness, venturesomeness, physical or verbal aggression, anger, or hostility. It also appears that lower levels of empathy partially predict psychopathy scores.

Limitations of the Present Study

The results of the current investigation into impulsivity, aggressiveness and links with psychopathy are limited in a number of ways. The first, and perhaps most crucial, was the inability to analyse the results utilising age as a factor. A small, but potentially important number of participants in this study were older than the average first year psychology student. While few studies have directly examined the developmental pathway of psychopathy across the lifespan, it has been noted that both personality-driven and behavioural aspects of psychopathy (as measured by Factor 1 and Factor 2 of the PCL-R respectively) appear to have achieved stability by late adolescence or early adulthood (Blonigen, Hicks, Krueger, Patrick, & Iacono, 2006; Salekin, Rosenbaum & Lee, 2008), with some stabilising of behavioural manifestations by the late 30s (Hare, 2006). It appears however that while the more personality based Factor 1 traits tend to remain stable across the lifespan, Factor 2 behaviours decline with age, especially regarding non-violent offending after age 35-40 (Harpur & Hare, 1994). It is possible that further research involving a similar population may

reveal an age effect whereby older participants display lower scores on the erratic lifestyle and criminal tendencies of the SRP-III than do younger participants, which may be influencing the predictors of each of these subscales.

The second limitation of the current study was the inability to examine potential sex differences regarding impulsive-aggressiveness and psychopathy. The majority of the participants in this study were female, however a small group of males also completed the questionnaires. This group was unfortunately too small to allow for a comparison to occur. Many researchers have noted however that sex differences do occur particularly in the expression of aggression. While females appear to experience similar levels of anger and perceptions of threat, males are more likely to respond using direct and confrontational means such as physical aggression, while females are more likely to use indirect aggression or discuss their anger with an uninvolved person (Campbell, 2006; Verona & Kilmer, 2007). Sex differences have also been noted with respect to impulsiveness and psychopathy, with females generally displaying lower levels of these traits than males (see Warren & South, 2006 for a review).

A third weakness is in the difficulty generalising the results of the current study. The study sample consisted of a relatively homogenous group of undergraduate psychology students, and conclusions are therefore limited to a similar population. Further research would benefit from utilising a wider socio-economic and culturally diverse pool of participants.

Conclusions

The current study was undertaken as part of an ongoing investigation into the dimensional nature of maladaptive personality traits, including impulsivity,

aggressiveness and psychopathy. The results of this investigation provide evidence that a level of each of these traits is present within a non-clinical, non-forensic population, offering further support for the theory that impulsivity, aggressiveness and psychopathy are dimensional, rather than taxonic in nature, and can be meaningfully measured in otherwise functioning members of the general population.

The results of the current study support the theory that psychopathy is a multi-dimensional constellation of related deficits, each of which is differentially related to and predicted by impulsivity and aggressiveness. However, neither of these traits is enough in and of themselves to explain the behaviour of these individuals. It was also found that different aspects of impulsivity and aggressiveness are differentially implicated in the manifestation of the personality and behavioural aspects of self-reported psychopathic characteristics.

A further conclusion of this study is that self-report measures of impulsivity, aggressiveness and psychopathy can be reliably and validly utilised to identify a non-clinical, non-forensic population who may potentially be experiencing problems related to relatively high levels of each of these traits. This has important implications in terms of early identification of impulsive and aggressive individuals, who may also display related personality difficulties. Further research with screening devices such as the I7 Impulsiveness Questionnaire, the Aggression Questionnaire and the Self-Report Psychopathy scale may therefore aid in the development of early intervention programs targeting specific aspects of impulsivity, aggressiveness and subclinical psychopathy.

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Appendix A: Reliability Analysis

Scale: Aggression Questionnaire

Case Processing Summary

		N	%
Cases	Valid	143	93.5
	Excluded[a]	10	6.5
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.889	.894	29

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.258	1.336	3.245	1 909	2.429	.205	29
Item Variances	1.241	.468	1.882	1.414	4 018	.120	29

Scale: Physical Aggression AQ

Case Processing Summary

		N	%
Cases	Valid	148	96 7
	Excluded[a]	5	3.3
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.808	817	9

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.043	1.345	2 851	1.507	2.121	.277	9
Item Variances	1.253	.459	1.845	1.386	4.022	.251	9

Scale: Verbal Aggression AQ

Case Processing Summary

		N	%
Cases	Valid	153	100.0
	Excluded[a]	0	.0
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.752	.755	5

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.626	2.105	3 242	1.137	1.540	182	5
Item Variances	1.189	.936	1.491	.555	1.593	.060	5

Scale: Anger AQ

Case Processing Summary

		N	%
Cases	Valid	149	97 4
	Excluded[a]	4	2.6
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.765	775	7

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.300	1.852	3.054	1.201	1.649	.263	7
Item Variances	1.182	.855	1.758	.903	2.055	.090	7

Scale: Hostility AQ

Case Processing Summary

		N	%
Cases	Valid	152	99.3
	Excluded[a]	1	.7
	Total	153	100.0

a Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
827	.829	8

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.283	2.158	2.513	.355	1.165	023	8
Item Variances	1.381	.968	1.738	.769	1.795	.055	8

Scale: I7 Impulsivity Questionnaire

Case Processing Summary

		N	%
Cases	Valid	132	86 3
	Excluded[a]	21	13.7
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.745	.724	54

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	.589	.076	.970	.894	12.800	.046	54
Item Variances	.199	.030	.252	.222	8.508	.004	54

Scale: Impulsiveness I7

Case Processing Summary

		N	%
Cases	Valid	145	94.8
	Excluded[a]	8	5.2
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.787	.780	19

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	.477	.069	.710	.641	10.300	.028	19
Item Variances	.224	.065	.252	.187	3.893	.003	19

Scale: Venturesomeness I7

Case Processing Summary

		N	%
Cases	Valid	145	94.8
	Excluded[a]	8	5.2
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.800	.797	16

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	.532	.214	.800	.586	3.742	.031	16
Item Variances	.221	.161	.252	.091	1.562	.001	16

Scale: Empathy I7

Case Processing Summary

		N	%
Cases	Valid	139	90.8
	Excluded[a]	14	9.2
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.504	.503	19

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	.742	288	.971	.683	3.375	.039	19
Item Variances	.155	.028	.251	.223	8.922	.006	19

Scale: Self Report Psychopathy Scale

Case Processing Summary

		N	%
Cases	Valid	147	96.1
	Excluded[a]	6	3.9
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.905	.910	64

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.255	1.048	4.517	3.469	4.312	.519	64
Item Variances	1.241	.073	3.151	3.078	43.133	.416	64

Scale: Callous Affect SRP

Case Processing Summary

		N	%
Cases	Valid	148	96 7
	Excluded[a]	5	3.3
	Total	153	100.0

a Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.648	.643	16

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.380	1.419	4.520	3.101	3.186	.801	16
Item Variances	986	.534	2.069	1.536	3.877	.147	16

Scale: Interpersonal Manipulation SRP

Case Processing Summary

		N	%
Cases	Valid	149	97.4
	Excluded[a]	4	2.6
	Total	153	100 0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
825	830	16

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.312	1.564	3 329	1.765	2.129	.235	16
Item Variances	1.203	.763	1.830	1.067	2.400	.082	16

Scale: Erratic Lifestyle SRP

Case Processing Summary

		N	%
Cases	Valid	149	97.4
	Excluded[a]	4	2.6
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.815	.823	16

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.655	1.597	3.436	1.839	2.151	.271	16
Item Variances	1.393	.770	2 998	2.228	3.892	.267	16

Scale: Criminal Tendencies SRP

Case Processing Summary

		N	%
Cases	Valid	149	97.4
	Excluded[a]	4	2.6
	Total	153	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.752	.771	16

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	1.672	1.047	2.745	1.698	2.622	.323	16
Item Variances	1.372	.072	3.172	3.100	43.994	1.133	16

Appendix B: Correlation Analysis

Descriptives

Descriptive Statistics

	N	Mean	Std. Deviation
Age	153	22.90	7.986
Physical Aggression	153	18 27	6.280
Verbal Aggression	153	13.13	3.862
Hostility	153	17.73	5.822
Anger	153	16.52	5 644
Aggression Total	153	65 65	16.077
Venturesomeness	153	8.22	3.660
Impulsiveness	153	8.96	4.218
Empathy	153	13.73	2.724
Impulsivity Total	153	17.18	6.273
Lie	153	7.93	2 005
Interpersonal Manipulation	153	36.49	9.789
Callous Affect	153	37.51	7.345
Erratic Lifestyle	153	41.90	10.462
Criminal Tendencies	153	26 37	8.896
Psychopathy Total	153	142.27	29.967
Valid N (listwise)	153		

Within Measures Correlations

Correlations

		Aggression Total	Impulsivity Total	Psychopathy Total
Aggression Total	Pearson Correlation	1	.387**	.590**
	Sig. (2-tailed)		.000	.000
	N	153	153	153
Impulsivity Total	Pearson Correlation	.387**	1	.590**
	Sig. (2-tailed)	.000		.000
	N	153	153	153
Psychopathy Total	Pearson Correlation	.590**	.590**	1
	Sig. (2-tailed)	.000	.000	
	N	153	153	153

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Physical Aggression	Verbal Aggression	Hostility	Anger
Physical Aggression	Pearson Correlation	1	.547**	.431**	.386**
	Sig. (2-tailed)		.000	.000	.000
	N	153	153	153	153
Verbal Aggression	Pearson Correlation	.547**	1	.296**	.370**
	Sig. (2-tailed)	.000		.000	000
	N	153	153	153	153
Hostility	Pearson Correlation	.431**	.296**	1	.358**
	Sig. (2-tailed)	.000	.000		.000
	N	153	153	153	153
Anger	Pearson Correlation	.386**	.370**	.358**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	153	153	153	153

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Empathy	Impulsivity Total
Empathy	Pearson Correlation	1	- 020
	Sig. (2-tailed)		.808
	N	153	153
Impulsivity Total	Pearson Correlation	-.020	1
	Sig. (2-tailed)	.808	
	N	153	153

Correlations

		Interpersonal Manipulation	Callous Affect	Erratic Lifestyle	Criminal Tendencies
Interpersonal Manipulation	Pearson Correlation	1	.696**	.665**	.441**
	Sig. (2-tailed)		.000	.000	.000
	N	153	153	153	153
Callous Affect	Pearson Correlation	.696**	1	.601**	.432**
	Sig. (2-tailed)	.000		.000	.000
	N	153	153	153	153
Erratic Lifestyle	Pearson Correlation	.665**	601**	1	.524**
	Sig. (2-tailed)	.000	.000		.000
	N	153	153	153	153
Criminal Tendencies	Pearson Correlation	.441**	.432**	.524**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	153	153	153	153

** Correlation is significant at the 0.01 level (2-tailed).

Between Measures Correlations

Correlations

		Aggression Total	Empathy	Impulsivity Total	Interpersonal Manipulation	Callous Affect	Erratic Lifestyle	Criminal Tendencies
Aggression Total	Pearson Correlation	1	.126	.387**	.535**	.511**	.504**	.384**
	Sig. (2-tailed)		.122	.000	.000	.000	.000	.000
	N	153	153	153	153	153	153	153
Empathy	Pearson Correlation	.126	1	-.020	.004	-.142	-.047	.017
	Sig. (2-tailed)	.122		.808	.961	.079	.567	.830
	N	153	153	153	153	153	153	153
Impulsivity Total	Pearson Correlation	.387**	-.020	1	.424**	.356**	.690**	.417**
	Sig. (2-tailed)	.000	.808		.000	.000	.000	.000
	N	153	153	153	153	153	153	153
Interpersonal Manipulation	Pearson Correlation	.535**	.004	.424**	1	.696**	.665**	.441**
	Sig. (2-tailed)	.000	.961	.000		.000	.000	.000
	N	153	153	153	153	153	153	153
Callous Affect	Pearson Correlation	.511**	-.142	.356**	.696**	1	.601**	.432**
	Sig. (2-tailed)	.000	.079	.000	.000		.000	.000
	N	153	153	153	153	153	153	153

Erratic Lifestyle	Pearson Correlation	.504**	-.047	.690**	.665**	.601**	1	.524**
	Sig. (2-tailed)	.000	.567	.000	.000	.000		.000
	N	153	153	153	153	153	153	153
Criminal Tendencies	Pearson Correlation	.384**	.017	.417**	.441**	.432**	.524**	1
	Sig. (2-tailed)	.000	.830	.000	.000	.000	.000	
	N	153	153	153	153	153	153	153

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix C: Regression Analysis

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Impulsivity Total	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Aggression Total	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Psychopathy Total

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.590[a]	.349	.344	24.266	.349	80 806	1	151	.000
2	.709[b]	.502	.496	21.279	.154	46 371	1	150	.000

a. Predictors: (Constant), Impulsivity Total

b. Predictors: (Constant), Impulsivity Total, Aggression Total

c Dependent Variable: Psychopathy Total

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47581.647	1	47581.647	80.806	.000[a]
	Residual	88914.366	151	588.837		
	Total	136496.013	152			
2	Regression	68577.984	2	34288.992	75.729	000[b]
	Residual	67918.029	150	452.787		
	Total	136496.013	152			

a Predictors: (Constant), Impulsivity Total

b. Predictors: (Constant), Impulsivity Total, Aggression Total

c. Dependent Variable: Psychopathy Total

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Aggression Total	.425[a]	6.810	.000	.486	.850	1.176	.850

a. Predictors in the Model: (Constant), Impulsivity Total

b. Dependent Variable: Psychopathy Total

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	96.81	202.26	142.27	21.241	153
Residual	-121.216	60.314	.000	21.138	153
Std. Predicted Value	-2.140	2.824	.000	1 000	153
Std. Residual	-5.697	2.834	.000	.993	153

a Dependent Variable: Psychopathy Total

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Physical Aggression	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Impulsiveness	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Venturesomeness	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	Verbal Aggression	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Psychopathy Total

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.585[a]	.342	.338	24.389	.342	78.477	1	151	.000
2	.683[b]	.466	.459	22.041	.124	34.885	1	150	.000
3	.713[c]	.508	.498	21.234	.042	12 622	1	149	.001
4	.726[d]	.528	.515	20.871	.020	6.230	1	148	.014

a. Predictors: (Constant), Physical Aggression

b. Predictors: (Constant), Physical Aggression, Impulsiveness

c. Predictors: (Constant), Physical Aggression, Impulsiveness, Venturesomeness

d. Predictors: (Constant), Physical Aggression, Impulsiveness, Venturesomeness, Verbal Aggression

ANOVA[e]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46679.261	1	46679.261	78.477	.000[a]
	Residual	89816.752	151	594.813		
	Total	136496.013	152			
2	Regression	63626.177	2	31813.088	65.486	.000[b]
	Residual	72869.836	150	485 799		
	Total	136496.013	152			
3	Regression	69316.847	3	23105.616	51.247	.000[c]
	Residual	67179.166	149	450.867		
	Total	136496.013	152			
4	Regression	72030 300	4	18007.575	41.342	.000[d]
	Residual	64465.713	148	435.579		
	Total	136496.013	152			

a. Predictors: (Constant), Physical Aggression

b. Predictors: (Constant), Physical Aggression, Impulsiveness

c. Predictors: (Constant), Physical Aggression, Impulsiveness, Venturesomeness

d. Predictors: (Constant), Physical Aggression, Impulsiveness, Venturesomeness, Verbal Aggression

ANOVA[e]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46679.261	1	46679.261	78.477	.000[a]
	Residual	89816.752	151	594.813		
	Total	136496.013	152			
2	Regression	63626.177	2	31813.088	65.486	.000[b]
	Residual	72869.836	150	485.799		
	Total	136496.013	152			
3	Regression	69316.847	3	23105.616	51.247	.000[c]
	Residual	67179.166	149	450.867		
	Total	136496.013	152			
4	Regression	72030.300	4	18007.575	41.342	.000[d]
	Residual	64465 713	148	435 579		
	Total	136496.013	152			

a Predictors: (Constant), Physical Aggression

b. Predictors: (Constant), Physical Aggression, Impulsiveness

c. Predictors: (Constant), Physical Aggression, Impulsiveness, Venturesomeness

d. Predictors: (Constant), Physical Aggression, Impulsiveness, Venturesomeness, Verbal Aggression

e. Dependent Variable: Psychopathy Total

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std Error	Beta			Zero-order	Partial	Part
1	(Constant)	91.272	6.085		15.000	.000			
	Physical Aggression	2.791	.315	.585	8.859	.000	.585	.585	.585
2	(Constant)	76.772	6.022		12.748	.000			
	Physical Aggression	2.307	.296	.483	7.786	.000	.585	.536	.465
	Impulsiveness	2.605	.441	.367	5.906	.000	.500	.434	.352
3	(Constant)	69.562	6.146		11.318	.000			
	Physical Aggression	2.044	.295	.428	6.933	.000	.585	.494	.398
	Impulsiveness	2.303	433	.324	5.313	.000	.500	.399	.305
	Venturesomeness	1.791	504	.219	3.553	.001	.435	.279	.204
4	(Constant)	61.741	6.806		9.072	.000			
	Physical Aggression	1.642	.331	.344	4.954	.000	.585	.377	.280
	Impulsiveness	2.008	.442	.283	4.542	.000	.500	.350	.257
	Venturesomeness	1.786	.495	.218	3.606	.000	.435	.284	.204
	Verbal Aggression	1 359	.544	.175	2.496	.014	.515	.201	.141

a. Dependent Variable: Psychopathy Total

Excluded Variables[e]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Verbal Aggression	.278[a]	3.662	.000	.286	.701
	Hostility	.066[a]	.908	.366	.074	.814
	Anger	.161[a]	2.281	.024	.183	.851
	Venturesomeness	283[a]	4.313	.000	.332	.907
	Impulsiveness	367[a]	5 906	000	.434	.923
	Empathy	-.083[a]	-1.252	.212	-.102	.996
2	Verbal Aggression	.176[b]	2.413	.017	.194	.648
	Hostility	.030[b]	.448	.654	.037	.807
	Anger	110[b]	1.693	.093	.137	.835
	Venturesomeness	.219[b]	3.553	.001	.279	.872
	Empathy	-.076[b]	-1.278	.203	-.104	.996
3	Verbal Aggression	.175[c]	2.496	.014	.201	.648
	Hostility	.042[c]	.648	.518	.053	.805
	Anger	.109[c]	1.745	.083	.142	.835
	Empathy	-.065[c]	-1.134	.259	-.093	.993
4	Hostility	.033[d]	.520	.604	.043	.802
	Anger	.085[d]	1.350	.179	.111	.809
	Empathy	-.054[d]	- 947	:345	-.078	.986

a. Predictors in the Model. (Constant), Physical Aggression

b. Predictors in the Model: (Constant), Physical Aggression, Impulsiveness

c Predictors in the Model: (Constant), Physical Aggression, Impulsiveness, Venturesomeness

d. Predictors in the Model: (Constant), Physical Aggression, Impulsiveness, Venturesomeness, Verbal Aggression

e. Dependent Variable: Psychopathy Total

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Physical Aggression	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Verbal Aggression	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Venturesomeness	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	Anger	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Interpersonal Manipulation

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig F Change
1	.503[a]	.253	.248	8.488	.253	51.160	1	151	.000
2	.558[b]	.312	.302	8.176	.058	12.744	1	150	.000
3	.585[c]	.343	.329	8.016	.031	7.049	1	149	009
4	.600[d]	.360	.342	7.938	.017	3.934	1	148	.049

a. Predictors: (Constant), Physical Aggression

b. Predictors: (Constant), Physical Aggression, Verbal Aggression

c. Predictors: (Constant), Physical Aggression, Verbal Aggression, Venturesomeness

d. Predictors: (Constant), Physical Aggression, Verbal Aggression, Venturesomeness, Anger

ANOVA[e]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3685.708	1	3685.708	51.160	.000[a]
	Residual	10878.527	151	72 043		
	Total	14564.235	152			
2	Regression	4537.572	2	2268.786	33.941	.000[b]
	Residual	10026.663	150	66 844		
	Total	14564 235	152			
3	Regression	4990.469	3	1663.490	25.889	.000[c]
	Resıdual	9573.766	149	64.253		
	Total	14564.235	152			
4	Regression	5238.340	4	1309.585	20.783	.000[d]
	Residual	9325.896	148	63.013		
	Total	14564.235	152			

a. Predictors: (Constant), Physical Aggression

b. Predictors: (Constant), Physical Aggression, Verbal Aggression

c. Predictors: (Constant), Physical Aggression, Verbal Aggression, Venturesomeness

d. Predictors: (Constant), Physical Aggression, Verbal Aggression, Venturesomeness, Anger

e. Dependent Variable: Interpersonal Manipulation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	22.161	2.118		10.465	.000
	Physical Aggression	.784	.110	.503	7.153	.000
2	(Constant)	17.049	2.492		6.841	.000
	Physical Aggression	.538	.126	.345	4.261	.000
	Verbal Aggression	.732	.205	.289	3.570	.000
3	(Constant)	14.797	2.587		5.721	.000
	Physical Aggression	.460	.127	.295	3.614	.000
	Verbal Aggression	.702	.201	.277	3.485	.001
	Venturesomeness	.496	.187	.186	2.655	.009
4	(Constant)	12 856	2.742		4.689	.000
	Physical Aggression	.402	.129	.258	3.108	.002
	Verbal Aggression	.620	.204	.244	3.040	.003
	Venturesomeness	.489	.185	.183	2.641	.009
	Anger	.251	.126	.144	1.983	.049

a. Dependent Variable: Interpersonal Manipulation

Excluded Variables[e]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics: Tolerance
1	Verbal Aggression	289[a]	3.570	.000	.280	.701
	Hostility	064[a]	.814	.417	.066	.814
	Anger	.196[a]	2.619	.010	.209	.851
	Venturesomeness	.199[a]	2.757	.007	.220	.907
	Impulsiveness	.218[a]	3.053	.003	.242	.923
	Empathy	-.029[a]	-.403	.687	-.033	.996
2	Hostility	.043[b]	.564	.573	.046	.809
	Anger	.148[b]	1 996	.048	.161	.815
	Venturesomeness	.186[b]	2.655	.009	.213	.904
	Impulsiveness	.161[b]	2.224	.028	.179	.855
	Empathy	-.008[b]	-.115	.908	-.009	.989
3	Hostility	.050[c]	.672	.503	.055	.808
	Anger	.144[c]	1.983	049	.161	.815
	Impulsiveness	130[c]	1.784	.077	.145	.824
	Empathy	.001[c]	.020	.984	.002	986
4	Hostility	.019[d]	.247	.805	.020	.769
	Impulsiveness	.118[d]	1.632	.105	.133	.818
	Empathy	- 013[d]	-.199	843	-.016	.974

a Predictors in the Model: (Constant), Physical Aggression

b. Predictors in the Model: (Constant), Physical Aggression, Verbal Aggression

c. Predictors in the Model: (Constant), Physical Aggression, Verbal Aggression, Venturesomeness

d. Predictors in the Model: (Constant), Physical Aggression, Verbal Aggression, Venturesomeness, Anger

e. Dependent Variable: Interpersonal Manipulation

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Physical Aggression	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Verbal Aggression	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Empathy	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= 100).

a. Dependent Variable: Callous Affect

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.523[a]	.273	.269	6.282	.273	56.801	1	151	.000
2	.557[b]	.310	.301	6.141	.037	7.996	1	150	005
3	.580[c]	.336	.323	6.045	.026	5.789	1	149	.017

a. Predictors: (Constant), Physical Aggression

b Predictors: (Constant), Physical Aggression, Verbal Aggression

c. Predictors: (Constant), Physical Aggression, Verbal Aggression, Empathy

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2241.489	1	2241.489	56.801	.000[a]
	Residual	5958.747	151	39.462		
	Total	8200.235	152			
2	Regression	2543 063	2	1271.532	33.715	.000[b]
	Residual	5657.172	150	37.714		
	Total	8200.235	152			
3	Regression	2754.629	3	918.210	25.124	.000[c]
	Residual	5445.606	149	36.548		
	Total	8200.235	152			

a. Predictors: (Constant), Physical Aggression

b. Predictors: (Constant), Physical Aggression, Verbal Aggression

c. Predictors: (Constant), Physical Aggression, Verbal Aggression, Empathy

d. Dependent Variable: Callous Affect

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	26.335	1.567		16.803	.000
	Physical Aggression	.611	.081	523	7.537	.000
2	(Constant)	23.294	1.872		12 443	.000
	Physical Aggression	.465	.095	.397	4.905	.000
	Verbal Aggression	.436	.154	.229	2.828	.005
3	(Constant)	29.271	3 093		9.463	.000
	Physical Aggression	.488	.094	.417	5.199	000
	Verbal Aggression	.404	.152	.213	2.657	.009

Empathy	-.436	.181	-.162	-2.406	.017

a. Dependent Variable: Callous Affect

Excluded Variables[d]

Model		Beta In	t	Sig	Partial Correlation	Collinearity Statistics Tolerance
1	Verbal Aggression	.229[a]	2.828	.005	.225	.701
	Hostility	.034[a]	.445	.657	.036	.814
	Anger	.124[a]	1.665	.098	.135	.851
	Venturesomeness	.140[a]	1.943	.054	.157	.907
	Impulsiveness	.147[a]	2.061	.041	.166	.923
	Empathy	-.177[a]	-2.590	.011	-.207	.996
2	Hostility	.018[b]	.233	.816	.019	.809
	Anger	.085[b]	1.137	.257	.093	.815
	Venturesomeness	.129[b]	1.826	.070	.148	.904
	Impulsiveness	.100[b]	1.371	.173	.112	.855
	Empathy	-.162[b]	-2.406	.017	-.193	.989
3	Hostility	.055[c]	.725	470	.059	.778
	Anger	.106[c]	1.430	.155	.117	.806
	Venturesomeness	.121[c]	1.729	.086	.141	.901
	Impulsiveness	.101[c]	1.405	.162	.115	.855

a. Predictors in the Model: (Constant), Physical Aggression

b. Predictors in the Model: (Constant), Physical Aggression, Verbal Aggression

c. Predictors in the Model: (Constant), Physical Aggression, Verbal Aggression, Empathy

d. Dependent Variable: Callous Affect

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Impulsiveness	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Venturesomeness	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100)
3	Physical Aggression	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	Verbal Aggression	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Erratic Lifestyle

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.610[a]	.372	.368	8.315	.372	89.624	1	151	.000
2	.694[b]	.481	.474	7.585	.109	31.489	1	150	.000
3	.732[c]	.536	.526	7.201	054	17.410	1	149	000
4	.744[d]	.554	.542	7.084	.018	5.977	1	148	.016

a. Predictors: (Constant), Impulsiveness

b. Predictors: (Constant), Impulsiveness, Venturesomeness

c. Predictors: (Constant), Impulsiveness, Venturesomeness, Physical Aggression

d. Predictors: (Constant), Impulsiveness, Venturesomeness, Physical Aggression, Verbal Aggression

ANOVA[e]

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	6197.173	1	6197.173	89.624	.000[a]
	Residual	10441.153	151	69.147		
	Total	16638.327	152			
2	Regression	8008.773	2	4004 387	69.605	.000[b]
	Residual	8629.554	150	57.530		
	Total	16638.327	152			
3	Regression	8911.587	3	2970.529	57.283	.000[c]
	Residual	7726 739	149	51.857		
	Total	16638.327	152			
4	Regression	9211.541	4	2302 885	45.892	.000[d]
	Residual	7426.786	148	50.181		
	Total	16638.327	152			

a. Predictors: (Constant), Impulsiveness

b. Predictors: (Constant), Impulsiveness, Venturesomeness

c. Predictors: (Constant), Impulsiveness, Venturesomeness, Physical Aggression

d. Predictors: (Constant), Impulsiveness, Venturesomeness, Physical Aggression, Verbal Aggression

e. Dependent Variable: Erratic Lifestyle

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	28.329	1.583		17.898	000
	Impulsiveness	1.514	.160	.610	9.467	.000
2	(Constant)	22.299	1.800		12.389	.000
	Impulsiveness	1.290	.151	.520	8.526	.000
	Venturesomeness	.978	.174	.342	5.612	.000
3	(Constant)	17.318	2.084		8.308	.000
	Impulsiveness	1.159	.147	.467	7.884	.000
	Venturesomeness	.799	.171	.280	4.675	.000
	Physical Aggression	.417	.100	.250	4.172	.000
4	(Constant)	14.717	2.310		6.371	.000
	Impulsiveness	1.061	.150	.428	7.070	.000
	Venturesomeness	.798	.168	.279	4.744	.000
	Physical Aggression	.284	.113	.170	2 521	.013
	Verbal Aggression	.452	.185	.167	2.445	.016

a. Dependent Variable: Erratic Lifestyle

Excluded Variables[e]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics: Tolerance
1	Physical Aggression	.321[a]	5.174	.000	.389	.923
	Verbal Aggression	.292[a]	4.455	.000	.342	863
	Hostility	.177[a]	2.751	.007	.219	.960
	Anger	.158[a]	2.427	.016	.194	.947
	Venturesomeness	.342[a]	5.612	.000	.417	.930
	Empathy	-.047[a]	-.725	.469	-.059	1.000
2	Physical Aggression	.250[b]	4.172	.000	.323	.865
	Verbal Aggression	.250[b]	4.123	.000	.320	.849
	Hostility	.159[b]	2.705	.008	.216	957
	Anger	.129[b]	2.149	.033	.173	.939
	Empathy	-.035[b]	-.596	.552	-.049	.999
3	Verbal Aggression	.167[c]	2.445	.016	.197	.648
	Hostility	.077[c]	1.233	220	.101	.805
	Anger	.055[c]	.896	.372	.073	835
	Empathy	-.054[c]	-.959	.339	- 079	.993
4	Hostility	.068[d]	1.117	.266	.092	.802
	Anger	.030[d]	.488	.626	.040	.809
	Empathy	-.043[d]	-.772	441	-.064	.986

a. Predictors in the Model: (Constant), Impulsiveness

b. Predictors in the Model: (Constant), Impulsiveness, Venturesomeness

c. Predictors in the Model: (Constant), Impulsiveness, Venturesomeness, Physical Aggression

d. Predictors in the Model: (Constant), Impulsiveness, Venturesomeness, Physical Aggression, Verbal Aggression

e. Dependent Variable: Erratic Lifestyle

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Physical Aggression	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Impulsiveness	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Criminal Tendencies

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.438[a]	.192	186	8 025	.192	35.795	1	151	.000
2	.504[b]	.254	.245	7.733	.063	12.639	1	150	.001

a. Predictors: (Constant), Physical Aggression

b. Predictors: (Constant), Physical Aggression, Impulsiveness

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2305.243	1	2305.243	35.795	.000[a]
	Residual	9724.521	151	64.401		
	Total	12029 765	152			
2	Regression	3060.931	2	1530.466	25.596	.000[b]
	Residual	8968.833	150	59.792		
	Total	12029.765	152			

a. Predictors: (Constant), Physical Aggression

b. Predictors. (Constant), Physical Aggression, Impulsiveness

c. Dependent Variable: Criminal Tendencies

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.040	2.002		7.512	000
	Physical Aggression	.620	.104	.438	5.983	.000
2	(Constant)	11.978	2.113		5 669	.000
	Physical Aggression	.518	.104	.366	4.983	.000
	Impulsiveness	.550	.155	.261	3.555	.001

a. Dependent Variable: Criminal Tendencies

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Verbal Aggression	.053[a]	.610	.543	.050	.701
	Hostility	-.008[a]	-.096	.924	-.008	.814
	Anger	.071[a]	889	.375	072	.851
	Venturesomeness	.180[a]	2.383	.018	.191	.907
	Impulsiveness	.261[a]	3.555	.001	.279	.923
	Empathy	-.011[a]	-.146	.884	-.012	.996
2	Verbal Aggression	-.030[b]	-.347	.729	-.028	.648
	Hostility	- 034[b]	-.436	.664	-.036	.807
	Anger	.033[b]	.431	.667	.035	.835
	Venturesomeness	.134[b]	1.784	.076	.145	.872
	Empathy	-.006[b]	-.087	.931	-.007	.996

a. Predictors in the Model: (Constant), Physical Aggression

b. Predictors in the Model: (Constant), Physical Aggression, Impulsiveness

c. Dependent Variable: Criminal Tendencies